

# HANDBOOKS



Prepared by the Training Section  
U. S. Office of Civilian Defense

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*Handbook of*

# FIRST AID



*United States*  
*Office of*  
**OFFICE OF CIVILIAN DEFENSE**  
*Washington, D. C.*



*Handbook of*

# FIRST AID



Prepared by

**U. S. OFFICE OF CIVILIAN DEFENSE**

In Cooperation with

**THE AMERICAN RED CROSS**

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# FOREWORD

The Handbook of First Aid has been prepared for the supplementary training of members of Civilian Defense Units and as a guide for continued practice after completion of the first aid course. It is not intended to replace the Textbook of First Aid of the American Red Cross, which is the standard reference for first aid workers. Its purpose is to concentrate the student's attention upon those first aid procedures which require special emphasis from the standpoint of Civilian Defense.

Students of first aid are expected to continue to practice the procedures which they studied during their course. They should assemble regularly in small groups to practice on each other. The descriptions and drawings found in the Handbook are intended primarily to serve as a guide for this "postgraduate" work.

It is recommended that nonprofessional members of Emergency Medical Field Units, Rescue Squads, Stretcher Teams, and other Civilian Defense workers take the Standard First Aid Course for Civilian Defense (20 hours) followed by the Advanced First Aid Course for Civilian Defense (10 hours), both of which are given by the American Red Cross. Holders of Standard First Aid Certificates of the American Red Cross will be given Advanced First Aid Certificates by the Red Cross upon satisfactory completion of the Advanced First Aid Course for Civilian Defense.

Recognizing the importance of thorough instruction in first aid for Civilian Defense workers, the American Red Cross and the Office of Civilian Defense cannot encourage alterations in the teaching schedule which would shorten the time available for first aid instruction and practice. First aid is one of many subjects studied by members of enrolled groups of Civilian Defense workers. To shorten the time necessary to train Civilian Defense workers, certain groups may be permitted to take 10 hours of first aid instruction for qualification as an enrolled Civilian Defense worker with the understanding that they will not receive a Red Cross certificate as a first aid worker until they have taken an additional 10 hours of instruction.

Industrial plants, business establishments, and other agencies, both governmental and voluntary, are urged to inaugurate a first aid training program and to organize Red Cross Volunteer First Aid Detachments among their employees. The local chapters of the American Red Cross are prepared to provide instructions for organization and qualified instructors to train personnel.

Individuals desiring first aid instruction should apply directly to the local Red Cross Chapter. In the event of a civilian war disaster, trained persons will be organized into Stretcher Teams to transport casualties to first aid posts and casualty stations. Other medical auxiliaries will be available for other forms of emergency first aid work.

## LESSON OUTLINE

### 20-HOUR FIRST AID COURSE FOR CIVILIAN DEFENSE

#### LESSON I:

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Bandage practice.	

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## LESSON VII:

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Practice and practical problems in the prevention and treatment of shock and the care of burns.	



## LESSON VIII:

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Practice and practical problems in transportation.	

## LESSON IX:

Common emergencies.  
Examination on artificial respiration.

## LESSON X:

*First 90 minutes:*  
General Review.  
*Last 30 minutes:*  
Practice and practical problems.

## EXAMINATION

## LESSON OUTLINE

# 10-HOUR FIRST AID COURSE FOR CIVILIAN DEFENSE

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Organization and functions of Emergency Medical Field Units .....	3
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Care of wounds .....	6
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### *First hour:*

Page

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## LESSON III:

### *First hour:*

Fractures—what not to do, emergency care, immobilization, spine fractures—neck, back..... 30

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### *Second hour:*

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## LESSON IV:

### *First hour:*

Artificial respiration..... 40

Prevention and care of shock..... 27

### *Second hour:*

Transportation—demonstration and practice: lifts and carries, loading and carrying stretcher..... 53

## LESSON V:

### *First hour:*

War gases—decontamination..... 62

Unconsciousness..... 69

### *Second hour:*

Transportation practice—loading and carrying stretcher, loading ambulance or truck.

## CHAPTER I

# ADVICE TO THE CIVILIAN DEFENSE FIRST AID WORKER

As a first aid worker in civilian defense you may wonder how you will behave under the conditions of an air raid—conditions which you have never experienced and find difficult to imagine. How will you react to the sight of serious wounds and of blood—how will the cries of the injured affect you? How will you bear yourself in the presence of the dead and dying?

This is a serious problem, but as soon as your imagination is confronted with the reality of the "incident," your qualms will vanish. Horror and its kindred sensations are caused by helplessness; when we have the power and knowledge to deal with horror, it disappears. The dark loses its terror when we turn on the light; a casualty's cries will cease to unnerve you when you have the power to ease the pain that causes them.

While examining and treating an injury, talk soothingly, almost as you would to a child with a cut finger. People in pain *are* like children. Encourage a casualty to talk if he can safely do so; it will bring confidence to both of you.

Be gentle and yet be firm in your care of injured persons. Carefully think out your course and then stick to it. Take your time. Do not become flustered by those around you.

Never discuss an injured person's condition or the condition of other casualties in his hearing.

He may ask how badly injured he is. You must make some answer, but remember that a doctor is the only one with enough knowledge to appraise the situation accurately. If it can be avoided, do not lie to him about his condition. On the other hand it would be even more foolish (and possibly disastrous) to tell him the truth bluntly. There is a happy medium which you must find, and it will vary according to the bearing of the patient and the nature of his injuries.

Be as quiet as possible. Try to impress the casualty with your confidence and competence.

A casualty's cries do not necessarily indicate the gravity of his condition. Those who complain the most may be only hysterical. Actually, the person who cries loudly may be less seriously injured than the one who does not, because he has more strength with which to cry.

With your limited experience it would be unwise for you to try to classify wounds as to seriousness. Persons claiming injury should be seen by a doctor no matter how trivial the wound may appear. Those who seem to be suffering only from nervous shock or hysteria may be in as much distress as the one with an obvious injury. They too should be seen by the doctor.

You must never assume on your own responsibility that a person is dead or that there is no chance for his recovery.

It is regrettable to make a mistake in caring for an injured person, but mistakes are made as easily in first aid as in anything else. If you should ever happen to make one it must be put in its proper place—under the heading “experience.” By practice and study you will become



expert in first aid, which lessens your chance of making a mistake.

## CHAPTER II

# GENERAL CONSIDERATIONS

### *Emergency Medical Service in Civilian Defense*

In the event of enemy attack, the local emergency medical service will operate as follows:

1. Warnings of the approach of hostile aircraft will come to the local control center from military establishments in the area and will be relayed to civilian defense officers.

2. Air raid wardens will notify the control center of the location and extent of local damage.

3. They will then enlist trained volunteers to give first aid to injured persons.

4. The control center or its substation will call out emergency squads comprised of doctors, nurses, and nursing auxiliaries.

5. These will establish casualty stations near the site of disaster to give assistance to the injured.

6. Teams, each consisting of doctor, nurse, and auxiliaries will be dispatched from casualty stations to establish advanced first aid posts close to the scene of emergency to care for the more severely injured and to evacuate them as rapidly as possible to hospitals.

7. Rescue squads sent to the scene by the control center will extricate the wounded and stretcher teams will conduct or transport injured persons to first aid posts, casualty stations, or hospitals.

8. Ambulances will be dispatched to the scene of the incident by the transport officer in the control center.

9. Severely injured persons will be transported to hospitals; others will be sent to their homes or temporary shelters.

### ***Definition of First Aid***

First aid is the immediate temporary care given by a trained person in case of accident or sudden illness before medical aid is available. It is given in order to prevent death or further injury, to relieve pain and counteract shock. To become *expert* in first aid requires many hours of training and practice.

### ***General Directions***

1. Keep the victim lying down.
2. Give immediate attention to serious bleeding and asphyxia.
3. Examine for injuries not clearly seen.
4. Keep victim warm.
5. Fill out identification tag at once.
6. Make injured comfortable.
7. Keep the crowd away.
8. See that someone calls a doctor.
9. Do not give an unconscious person anything to drink.
10. Do not permit casualty to be moved unless it is necessary and until it is safe.
11. When a casualty has several injuries, treat the most serious first, especially if it involves severe bleeding.
12. Remember you are a first aid worker and not a physician.



FIGURE 1

### ***First Aid Kit***

A belt type kit (fig. 1) similar to the Army first aid belt containing dressings, cravat bandages, and identification tags is to be supplied to Air Raid Wardens, Rescue Squads, and certain other enrolled groups. The belt should be worn at all times when the worker is on duty. The belt contains identification tags which are to be filled out by the first person to see the casualty. The tag is illustrated in figure 2.

**PERSON IDENTIFICATION TAG**

Name ☐ (Last name) ☐ (First name) ☐ (Middle name)

Address ☐ (City) ☐ (State) ☐ (Country)

Age ☐ Male ☐ Female ☐ Single ☐ Married ☐ Widowed

Person to be notified: Name ☐ Address ☐ Telephone ☐ Hour ☐ M.

Where logged: Date ☐ Time ☐ Day ☐ Hour ☐ M.

Diagnosis: ☐ Treatment given: ☐ Technician: ☐

Where sent: ☐ Signed: ☐ Organization: ☐

FIGURE 2

## CHAPTER III

# THE CARE OF WOUNDS

The chief *dangers* of wounds are severe *bleeding*, the introduction of *infection* and the development of *shock*. Bleeding should be controlled at once, for profuse bleeding may be followed by shock or result in lowered resistance to



infection. Serious infections frequently develop in neglected wounds. All wounds should, therefore, be treated by a physician.

Make no attempt to clean or wash the wound. Do not apply any antiseptic, disinfectant, or any other material such as ointments, salves, oils, or chemicals. Simply cover the wound with sterile gauze, fix it in place with bandage or adhesive plaster, and take the injured person to the doctor. The gauze used must be large enough to cover the wound and a margin of skin on all sides. It must be sterile, and therefore should be from a freshly opened package. The surface of the gauze to be placed against the wound must not touch anything before it is applied. Do not lift the dressing or slide it about after application.

Casualties with injuries which appear to be minor should be directed to a casualty station. Casualties with serious injuries must be transported by stretcher to a first aid post or sent by a doctor directly to a hospital by ambulance. Because injuries may appear minor on the surface but be severe in the depth, you should not permit an injured person to go home until he has been seen by a doctor.

Watch for bomb fragment wounds, which may be very small, often only a scratch. Such wounds have black edges. They must be considered serious because there will probably be damage to muscle and other tissue below the skin surface, and the fragment may be still embedded. A casualty with a wound in the body, however small, whether made by a bomb fragment or other missile, should be treated as for internal injuries.

Treatment for shock is important, especially

if hemorrhage is severe. Lacerated and crushing wounds are often accompanied by severe shock. The prevention and treatment of shock will be considered in chapter VII.

If a limb is severely torn or crushed it should be immobilized with a traction splint before the victim is moved. Only moderate traction should be used in these cases.

## CARE OF WOUNDS IN SPECIAL LOCATIONS

### *Head Injuries*

Head injuries are common war wounds. Severe injury may be caused by a blow on the head from falling timbers or flying debris, or the victim may be thrown against a wall or to the ground by the force of an explosion in such a way as to cause severe injury to his head. The injured person may be unconscious or dazed. Shock is usually present. He often resists efforts to help him. He may tear off bandages or clutch at the first aider as he tries to treat him.

In any case of head injury the brain may be damaged. The skull may be fractured. If this has occurred, blood stained fluid may leak from the ears.

If a casualty is dazed or unconscious and there is no obvious injury, examine the head first. Look for bruises or bumps. Even persons with slight or doubtful head injuries must be seen by a physician as soon as possible.

Wounds of the scalp are common in warfare. Because they bleed profusely they are terrifying to the beginner in first aid.

*First aid.*—If there is a wound of the scalp apply a sterile compress to the wound and hold

it in place with a firmly applied bandage as described on page 14. If there is bloody or watery discharge from the ears do not plug them with cotton and do not try to clean them. Simply apply a sterile dressing over the ears. Keep the victim warm and quiet. Keep him lying down with his head slightly elevated. *Fill out identification tag promptly*, for the victim may lose consciousness. Transport to the hospital on a *stretcher*.

### ***Internal Injury***

Serious injury may occur in the abdomen or in the chest as a result of penetration by a missile or crushing. Penetrating wounds about the hip joint or buttocks often cause internal injuries. Internal injury is always accompanied by internal bleeding and shock. The casualty may tear at his clothing in an effort to get more air. He may complain of thirst. If the wound is in the chest he may cough up blood.

*First aid*.—Treat for shock, which is always present. Keep the victim warm. Never give anything to drink. If the injury is in the abdomen keep the victim lying down, but if it is in his chest prop up the head and shoulders. All cases of internal injury must be transported on stretchers to a hospital as soon as possible. A casualty suffering from chest injuries should be propped up on the stretcher in a semisitting position, leaning toward the injured side. A casualty suffering from an abdominal injury should be transported on his back with legs slightly bent at the knees. No attempt should be made to replace protruding organs. Call a doctor.

## ***Injury to the Face***

Probably no injury is so terrifying as an injury to the face. When facial expression is lost the casualty appears to lose his identity as a human being. Bleeding is often profuse. Blood may run into the mouth or nose and strangle the victim. The jaw may be broken, in which case the tongue tends to fall backwards and obstruct the air passages.

In treating victims with facial injuries the first aid worker would do well to remember the miracles accomplished through plastic surgery. Although facial injuries are very gruesome, they are not the most dangerous to life.

*First aid.*—Determine whether the tongue has fallen into the back of the throat. If it has, grasp it in the fingers and pull it forward. Turn the victim onto his abdomen so that the blood will not run into his nose or mouth. Apply a liberal number of sterile gauze dressings to the wound and bind in place with a triangle bandage as described on page 13. If the tongue falls backwards pull it forward and apply a bandage to the chin as described on page 13.

## **CHAPTER IV**

# **DRESSINGS AND BANDAGES**

One of the most satisfactory dressings for wounds is the bandage compress. It is a piece of gauze attached to the center of a strip of bandage. The compress is to be opened without touching the inside, placed over the wound, and bound in place by the bandage tails (fig. 3).

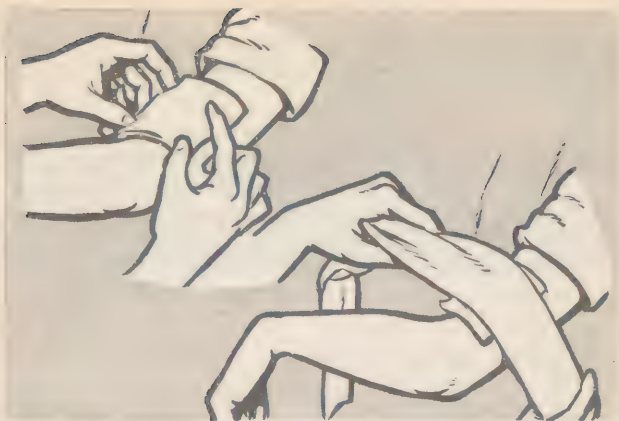


FIGURE 3

When a bandage compress is not available, use a sterile gauze pad of suitable size and thickness and bind in place with bandage or short strips of adhesive plaster. In emergency work, triangle bandages are useful for this purpose. They can be improvised from many materials. They will hold a piece of gauze in place and keep out dirt and contamination. These are intended as emergency dressings which will be replaced with more permanent dressings by the physician.

Roller bandages are excellent but are difficult to apply properly. A poorly applied roller bandage will not stay in place and will admit dirt.

### **THE TRIANGLE BANDAGE**

The triangle bandage is very useful in first aid. It may be used to keep splints or dressings in position, as a sling to support an injured part or as a tourniquet.



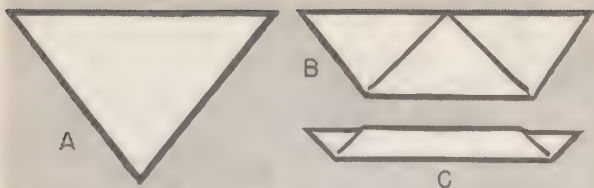


FIGURE 4

It may be used:

1. As an open triangle spread out to its full extent (fig. 4 A).
2. As a wide folded bandage (wide cravat). Carry the point (the angle opposite the longest edge) to the middle of the longest edge (B), and then fold the bandage again in the same direction (C).

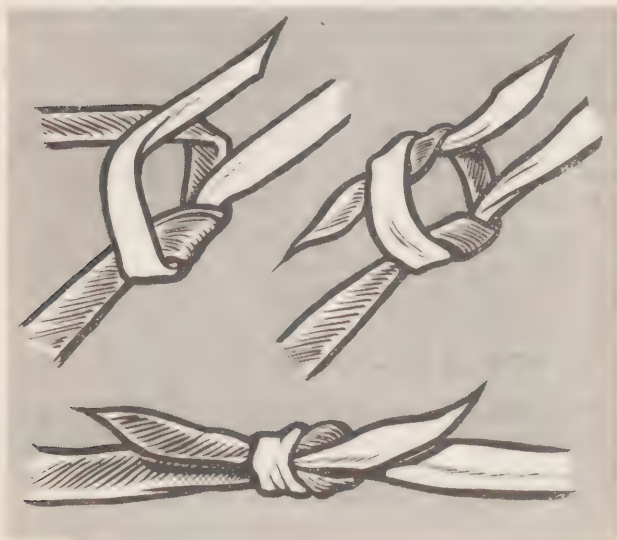


FIGURE 5

3. As a narrow folded bandage (cravat). Fold the wide cravat bandage once again, long edge to long edge.

*To tie a square knot.*—Take one end of the bandage in each hand, pass the end in the right hand over that in the left and tie a single knot. Pass the end now in the left hand over that in the right and complete the knot. The ends when pulled tight will be parallel with the folds of the bandage. The rule for tying a square knot is—right over left, left over right (fig. 5).

## ***Slings***

The large arm sling is used to support the forearm and hand. Spread out a triangle bandage on the front of the casualty with the point toward the injured arm. Pass the upper end around the back of the neck from the sound side so that it appears over the shoulder of the injured side. Carry the point behind the elbow of the injured arm; place the forearm across the middle of the bandage. Then carry the lower end up around the arm and tie to the upper end. Bring the point forward around the elbow and pin to the front of the sling.

Slings may be improvised (1) by pinning a coat sleeve to the front of the coat, (2) by turning up the lower edge of a coat and pinning it to the front of the coat, or (3) by passing the hand inside the coat and then buttoning it.

## ***Bandaging Special Parts of the Body***

1. *Chin and side of face* (fig. 6).—Put the center of a cravat under the chin. Pass one end over the top of the head to the temple on the



FIGURE 6

opposite side. Bring the other end to the temple, cross the bandage ends so that they go around the head in opposite directions. Tie at the side.

2. *The head* (fig. 7).—Take an unfolded triangle bandage and lay its center on top of the head so that its point is toward the back of the head and its long lower border lies along the forehead just above the eyebrows. Take a short fold in the long border and then pass the ends of the bandage around the back of the head above the ears (A). Cross the ends over the point of the bandage (B), bring the ends to the front again and tie in the middle of the forehead (C). Put your hand on the top of the head to steady the dressing and draw down the point of the bandage until the dressing is taut over the top of the head. Then turn up the point and tuck it under the bandage going around the head (D).

3. *Both eyes*.—Put the center of a wide cravat bandage over the eyes as a blindfold, carry the ends backward, cross behind the head and tie at the side. Never cover an eye affected by gas.

4. *One eye* (fig. 7E).—Lay a strip of narrow bandage about three and one-half feet long across the top of the head so that one end hangs down over the uninjured eye and the other end hangs



FIGURE 7

down the back. Place the middle of a cravat over the injured eye, carry the ends obliquely around the head so as not to cover the uninjured eye and tie. Carry the loose ends of the narrow bandage

strip over the top of the head and tie tightly enough to keep the cravat above the uninjured eye. If the eyeball has been injured bandage both eyes.

5. *Elbow or knee* (fig. 7F and G).—Bend the elbow or knee to a right angle and use a cravat at least 8 inches wide. Place the middle over the elbow and carry the ends around, crossing in the hollow. Carry the upper end entirely around the arm above the elbow, bringing it back to the hollow. Carry the lower end entirely around the arm below the elbow bringing it back to the hollow. Tie snugly at the outside edge of the hollow.

The knee bandage is applied in the same manner except that the bandage is wider. In folding the bandage for the knee bring the point of an open triangle bandage to the center of the base and do not fold again.

6. *Neck*.—Put the center of a cravat bandage over the dressing, cross the ends in back, and tie over the dressing.

7. *Abdomen*.—Put the center of a wide cravat bandage over the dressing. Carry the ends around the abdomen in opposite directions and tie at the side.

8. *The hip* (fig. 7H).—Pass a cravat bandage around the waist and tie in front. Then take an unfolded triangle bandage, put the center over the hip, point upwards, with its long border folded and lying across the thigh. Pass the ends around the thigh and tie on the outer side. Draw the point upwards under the bandage around the waist, turn it down over the bandage going around the waist and tie or pin in place.

9. *Shoulder* (fig. 7I).—Lay the center of an unfolded triangle bandage on the top of the



shoulder, point toward the head, with the lower border across the middle of the upper arm. Fold the lower border, carry the ends around the arm, cross them inside and tie on the outer side. Take a cravat bandage, and carry it from the shoulder of the injured side underneath the armpit on the opposite side and tie over the shoulder on the injured side. Draw the point of the first bandage under the second bandage, fold it back on itself and tie or pin in this position. Support the arm in a sling.

10. *Chest* (fig. 7 J, K, and L).—Using an open triangle bandage, place the point over the shoulder on the injured side with the middle of the long border below the shoulder. Carry the ends around the chest and tie directly below the shoulder on the injured side. This leaves a long and a short end. Carry the long end to the bandage point and tie.

11. *The foot*.—Place the sole of the foot in the center of an unfolded bandage with the toes toward the point. Turn the point over the toes and instep. Take one of the ends in each hand close to the foot, bring them forward and cross them over the instep, covering the point. Draw the point upwards to tighten the bandage, and fold it toward the toes. Carry the bandage ends back around the ankle, cross them behind, catching the lower border of the bandage. Bring the ends forward, cross them again over the instep so as to cover the point, carry one end under the foot and tie on inner side.

12. *Lower part of the abdomen*.—Pass a cravat bandage around the waist and tie. Pass the end of a wide cravat bandage under the first at the middle of the back, fold it over and secure it with a safety pin. Bring the other end forward

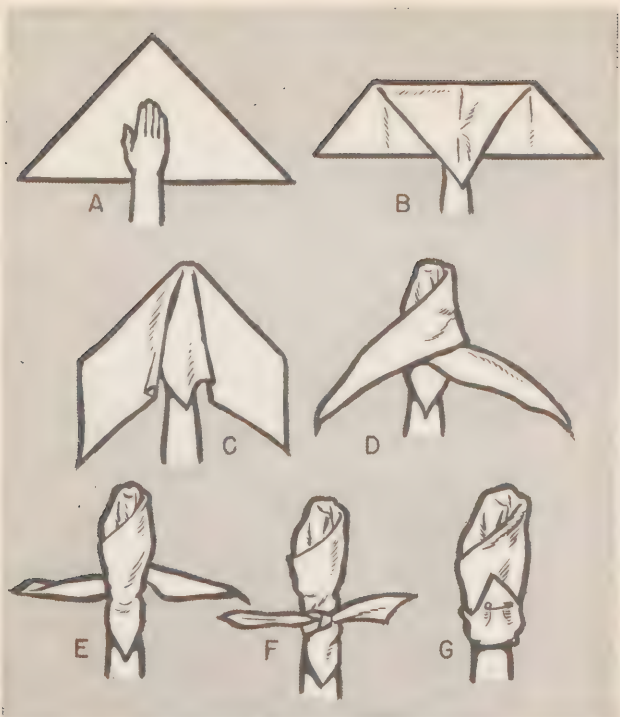


FIGURE 8

between the thighs and up to the waist bandage in the front. Pass it under the waist bandage and pin or tie.

13. *The hand* (fig. 8).—Place the hand, palm down, in the center of an unfolded triangle bandage with the fingers toward the point of the bandage (A). Bring the point over the back of the hand to the wrist (B), and pass the bandage ends around it, crossing the ends over the point (C and D). Circle the wrist and tie (E and F). Then turn the point toward the fingers and pin to the bandage (G).

## CHAPTER V

# HEMORRHAGE

Hemorrhage is a condition which sounds, looks and is serious. Persons with hemorrhage must have priority treatment and transport.

Although the presence of blood requires immediate attention, it is in itself a poor indicator of the severity of the wounds. A little blood goes a long way and may make a minor injury look frightening. On the other hand a severe wound, a torn off limb for example, may bleed very little because of shock.

Many people think the only way to stop bleeding is to apply a tourniquet. They fail to consider its dangers. They would be horrified to know of the number of limbs lost or paralyzed because tourniquets have been left in place without being loosened every 15 minutes.

A pad over the wound and a firm bandage combined with elevation of the limb will stop bleeding in nearly all cases.

### ***Kinds of Bleeding***

A. *Bleeding from artery*—blood *spurts* with each beat of heart unless cut artery is deep under tissues, in which case blood will well up.

B. *Bleeding from veins* will be a *steady flow*.

C. Bleeding from injury to very small vessels—*oozing*.

### ***Control of Bleeding***

A. *Bleeding from artery*.

1. *Pressure points*.—Pressure points are points where arteries lie close enough to bones to permit



FIGURE 9

sufficient compression by the fingers to control bleeding. Hemorrhage may be controlled by pressure on these points until pressure dressings can be applied to the bleeding wound (fig. 9).

(a) *For bleeding from the scalp and forehead*, press with finger or thumb just in front of the opening of the ear on the side nearer the bleeding (fig. 10).

(b) *For bleeding from the face below the eyebrows*, press against the side of the lower jaw just in front of the angle of the jawbone on the bleeding side (fig. 11).

(c) *For bleeding from the neck or cut throat*, place finger tips on the neck beside the windpipe on the bleeding side, and with thumb behind the neck, press toward backbone with ball of fingers (fig. 12).



FIGURE 10



FIGURE 11





FIGURE 12



FIGURE 13

(d) *For bleeding from the shoulder or armpit*, tip the head toward the shoulder on the injured side and press down with thumb at side of neck, just behind the collar bone (fig. 13).

(e) *For bleeding from the arm*, press with fingers on inner side of the arm just below armpit (fig. 14).

(f) *For bleeding from the leg*, put victim on his back and press downward with straight arm pressing the heel of the hand into the middle of the groin (fig. 15).

## 2. Tourniquet for arterial bleeding:

(a) *Materials*.—A cravat bandage or a strip of cloth at least two inches wide folded with enough



FIGURE 14



FIGURE 15

thicknesses to prevent cutting into skin (*never use wire or any similar materials*), and a stick about 6 inches long.

(b) *Application*.—Wrap folded cloth twice around arm a hand's breadth below the armpit or around leg a hand's breadth below the groin and tie with single knot. Place stick on knot, secure it with square knot and twist. Make certain the tourniquet stops the bleeding. Prevent stick from untwisting by tying ends of stick to the limb with bandage or handkerchief (fig. 16). Record the time the tourniquet was applied by writing the hour and minute on the tourniquet with a pencil.

(c) *Precautions.*—i. *Loosen tourniquet at end of 15 minutes.* If dressing over wound becomes more bloody, tighten tourniquet for another



FIGURE 16

fifteen minutes. If dressing does not show new bleeding, leave tourniquet loose, but in place, ready for use if bleeding starts again. Indicate time of loosening and tightening on tourniquet.

ii. Always mark large letters “TK” on victim’s forehead with skin pencil to indicate presence of tourniquet, so it may be loosened by those receiving victim.

iii. *Never apply a dressing over a tourniquet.*

iv. Never transfer responsibility to some one else (nurse, stretcher bearer, ambulance driver) until you make sure he knows a tourniquet has been applied.

(d) If part of a limb has been blown off, tightly apply a tourniquet close to the end of the stump and do not remove it.

### **B. Bleeding from veins.**

1. Elevate a bleeding arm or leg unless it is fractured.

2. Apply sterile dressing over the wound and tie firmly in place. *Remember not to touch surface of gauze to be placed over wound.* If no sterile dressing is at hand, use cleanest cloth available, preferably inside surface of freshly laundered handkerchief or towel. If a fracture is present stop the bleeding in this manner and then give first aid for the fracture.

**C. Bleeding from small vessels.**—Treat as a simple wound. Apply a bandage compress so that it presses firmly on the wound.

## **CHAPTER VI**

### **BURNS**

Burns in warfare may be extensive and serious. They may be caused by incendiary bombs or shells, by contact with live electric wires or they may occur in burning buildings.

*First aid.*—The first need is to reduce pain and avoid shock. If a doctor is immediately available, apply a sterile dressing over the wound without removing clothing, wrap the victim in a blanket to keep him warm and call the doctor.

If a doctor is not available, carefully cut the clothing away from the burn. Avoid tearing or pulling. Do not try to remove bits of clothing or dirt which may be stuck to the burned area. Spread tannic acid jelly on a gauze compress,



cover the burn, bandage lightly, wrap the victim in blankets and transport immediately to the hospital.

Persons with burns should be treated for shock.

Ointments, salves, or greasy substances should never, under any circumstances be put on a burn. These materials must be removed before proper treatment can be given by the doctor, and because they will not dissolve in water their removal is very difficult.

*Chemical burns.*—

1. Use large quantities of water to dilute and wash off the chemical, followed by usual first aid for burns.

2. Phosphorus burns. See chapter XI, Chemical Warfare.

## CHAPTER VII

# SHOCK (COLLAPSE)

Shock<sup>1</sup> is present to some extent in all injuries. It is a serious condition which frequently results in death when the injuries would not of themselves prove fatal. It is a depression of the nervous system and the functions of the body. There is a loss of body heat and a decrease in the amount of circulating blood. To compensate for this the heart beats faster. Severe shock may occur in the absence of conspicuous manifestations such as hemorrhage.

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<sup>1</sup> The term shock must not be confused with apoplexy or stroke, which is spoken of as "shock" in some sections of the United States.

The first aid worker must not become so intent on the care of an injury that the victim develops severe shock because simple preventive measures were omitted. The first aid measures for the prevention of shock are so simple and commonplace that the inexperienced might see little harm in omitting them. But, simple as they are, shock treatment is vitally important for every case.

As the amount of blood in circulation diminishes the brain does not get enough blood. Keep the casualty lying down so that the blood will go to the heart by gravity and may be pumped to the brain. Apply blankets and hot water bottles to prevent loss of body heat. This does not consist merely of piling blankets on top of an injured person—it is important to have as many thicknesses underneath him. Warm drinks (unless the casualty is unconscious) are beneficial. Do not remove more clothes from the victim than necessary to treat his injury. Loosen clothing at the neck, chest and waist.

Shock probably causes more fatalities than any other condition. Do not underestimate its dangers.

*Symptoms*—*Pale* (especially about the face and lips), <sup>2</sup> *chilly, clammy sweat*, nausea, mentally confused, *weak rapid pulse*, irregular breathing. May be unconscious.

*First aid.*—

1. Lay flat with *head low* and *feet raised* (fig. 17).
2. Put *blankets* and *wraps* under and over victim.
3. *Keep warm with hot water bottles* but *do not burn* (fig. 18).

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<sup>2</sup> In injured women, do not let make-up confuse you. Remove it.



FIGURE 17

4. Give warm and sweetened drinks, but not if the person is unconscious or injured internally.
5. Do *not* give alcoholic drinks.
6. *Get a doctor* without delay.

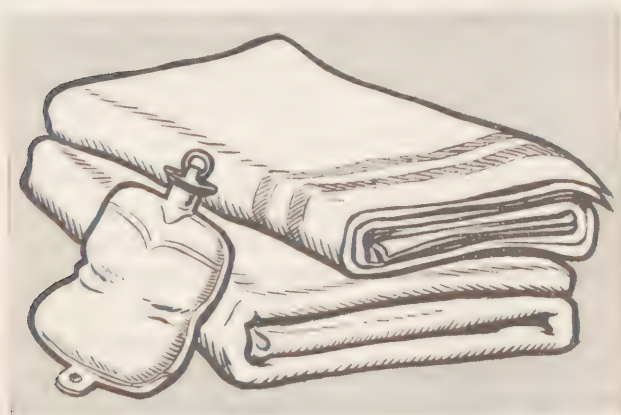


FIGURE 18

## CHAPTER VIII

# FRACTURES

### Definitions

*Fracture*—a broken bone (fig. 19).

*Simple fracture*—bone broken but skin is not.

*Compound fracture*—bone broken and skin broken. All fractures caused by bullets, bomb fragments or other missiles are compound.

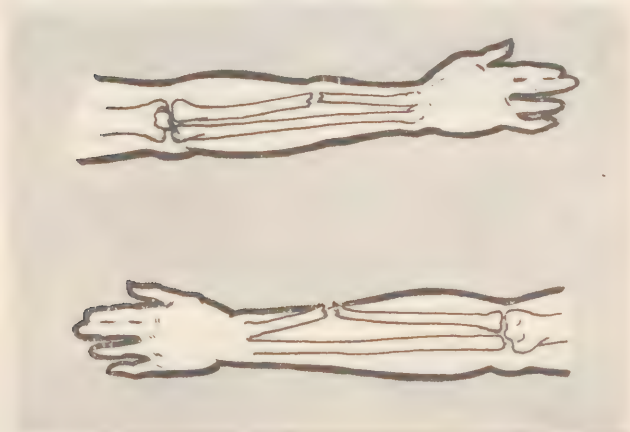


FIGURE 19

*Splint*—an appliance made of wood or metal to keep in place and protect an injured part.

*Fixed traction splint*—a splint which protects and prevents motion of broken bones by exerting pull from the ends of the bone.

*Immobilize*—to make broken bone fragments immovable by use of splints.

*Displacement*—bone fragments out of normal position.

*Overriding* overlapping of the ends of a broken bone. This is caused by contraction of muscles and results in shortening of the limb. It may take place shortly after the fracture and may be avoided by early application of a fixed traction splint.

### ***Recognition of Fractures***

1. *Pain* and tenderness.
2. Partial or complete *loss of use*.
3. *Deformity* may be pronounced or very slight.
4. *Swelling* and discoloration frequently not present for several hours.
5. Sense of *grating* with motion.
6. In compound fractures, bone may or may not protrude through skin wound.

### ***The Care of Fractures***

In making an examination to determine whether or not a fracture has occurred, *be very gentle*. Care must be taken not to move the broken fragments. Sometimes the first touch of an injured limb may give one the feeling of broken edges *grating together*.

If *fracture is suspected, handle* the case as if *a fracture were present*. Large nerves and blood vessels run close to bones. If these should be cut by the sharp edges of the broken bone, paralysis or bleeding will follow. *Pain and shock* will be increased *by the moving of bone fragments*.

It is important to keep persons with fractures *motionless* until the limb has been splinted. Moving a person with a fractured bone without splints may increase shock and result in death.



Traction splints most effectively protect the victim from these dangers. Deaths from fractured thighs were halved in the World War after traction splints were applied on the battlefield.

*"Splint them where they lie."* If you don't know how, get someone who does. If there is a compound fracture, *get a doctor*. If none is immediately available, expose the injury by carefully *cutting* away the clothing without moving the broken bone. Do not pull or tear away clothing. If there is bleeding it must be controlled. Apply sterile dressing, moving the injured part as little as possible while bandaging. The fracture should then be splinted.

### ***Fracture of Spine***

*Broken backs* and *broken necks* are so dangerous that they require special first aid measures. Improper care may result in permanent paralysis or death of a person with these injuries.

*Broken neck.*—The victim, if conscious, will complain of pain in the neck. Many cases will hold the head and neck stiff and motionless, but some will be completely relaxed and have no control of the head. Injury to the spine may cause paralysis. Can the injured move his hands? Try his grip (both hands). Record any paralysis or weakness on the identification tag.

Keep him lying in the position in which he was found and prevent motion of the head. Do not give him water as he may move his head to drink. Cover him with blankets or wraps. Get a doctor.

If a victim with a broken neck must be moved get a door, shutter, or wide board and place it beside him with the end at least 4 inches above the



FIGURE 20

top of his head. The board should be at least 15 inches wide and 5 feet or more in length.

One person kneels at the victim's head, holding the head between his two hands and steadies the head so that the head, neck, and shoulders move as a unit with the body without bending. One or more assistants grasp the victim's clothing at the hips and shoulders and carefully slide him side-ward onto the board or door so that he remains face upward, arms at his sides, head, trunk, and extremities on the board. The head must not be raised or the neck bent forward or sideways. The arms may then be folded over the chest and held together with safety pins or bandage. Several straps or triangle bandages should then be placed around the victim and the board to hold him in place during transportation. A folded sweater or coat should be placed around his head to hold it in position, or socks filled with sand or earth may be used. The board is then picked up and the victim transported as though he were on a stretcher (fig. 20).



FIGURE 21

If a victim with a broken neck is found lying on his face a door or wide board should be placed beside him as described above, and the arm at that side brought above the head. The person kneeling at the head grasps it firmly at the sides covering the ear and the back end of the jaw with his hands. Assistants grasp the victim's clothing at the shoulders and hips and gently roll him onto the board, the man at the head steadying the head so that it is kept in line with the rest of the body. Moderate traction should be exerted by the hands holding the head. The head must not be allowed to tilt either forward or backward.

*Broken back.*—When the backbone is broken below the neck, the only symptom may be pain in the back. If the spinal cord is damaged or under pressure, the victim may be unable to move his feet, but can move his hands.

Any move which doubles the injured man forward may cause death or paralysis for life. He must, therefore, be kept motionless in the position in which he is found. Get a doctor. *Keep him warm. Reassure him. Do not let him move.* If necessary to move a victim found on his back, place a door or wide board beside him as described above. Raise the arm on the side toward the board so that it is straight above the

victim's head. Several assistants kneel alongside the board opposite the victim and, grasping his clothing on the far side, they roll him slowly and gently towards them so that he lies face downwards on the board. If a door is used the assistants kneel on the door, leaving enough space for the victim. In making this roll the body must move as a unit. There should be no twisting or jerking. Then bend one forearm so that the head will rest on it (fig. 21).

If a casualty with a broken back is found lying on his belly the door or board should be placed beside him. Assistants grasp his clothing and slide him onto the board, one person guarding his face. He remains in a face-down position. Several straps or bandages should then be placed around the victim and the board to bind him firmly in place during transportation.

Victims with broken backs should, if possible, be moved only on a rigid support. A blanket may safely be used if no rigid support is available. If the victim is on his back he must be rolled onto a blanket. If the victim is found lying on his belly he must be slid onto the blanket. If the victim is found on his side or in a crumpled condition he must be carefully straightened out. With one person at the feet, a second at the head, and one in the middle, the victim is rolled onto his back in the case of a broken neck and onto his belly in the case of a broken back.

If both the neck and back are broken, handle as a broken neck.

In case of doubt, *handle a suspected fracture as if it were actually a fracture.*

## FIXED TRACTION SPLINTS

These are mechanical devices for immobilizing fractures simply by maintaining a steady pull on the affected limb. This tends to keep the broken fragments lined up in proper position. If applied early traction splints prevent overriding or displacement of the broken fragments by the muscle spasm that develops. The steady pull also prevents the broken ends from injuring nerves and blood vessels.

*Fixed traction for the lower extremity.*—The half ring leg splint known as the Keller-Blake Splint (fig. 22A), which has been adopted

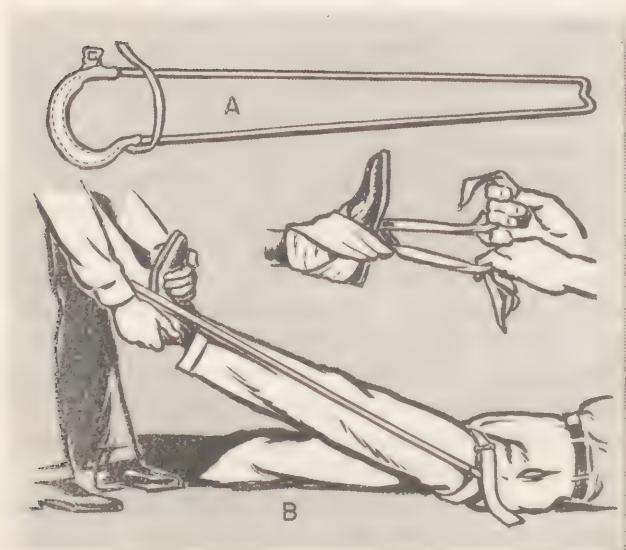


FIGURE 22



by the United States Army, should be used for a fracture of the leg at any point from the hip to the ankle. The splint may be applied without removing clothing. Two first aid workers are needed for the application of the splint.

One person grasps the foot with or without the shoe on, keeping the foot at a right angle to the leg with the toes pointing up. A steady firm pull is made. At the same time the limb is straightened to a position as nearly normal as possible and the foot is slowly raised until the heel is a foot or more above the ground.

While pull is maintained, the splint is placed in position by slipping the half ring under the upper portion of the thigh with the short side-bar inside. Move the splint upwards until the half ring meets the crotch. Then buckle the strap snugly but not tightly across the thigh to the side bar on the opposite side (fig. 22B).

Then apply a *traction hitch* to the foot as illustrated in figure 23. Tie two cravat bandages together, place the knot under the sole of the foot at the instep, so that it forms a stirrup (A). Carry ends of the bandage over the foot and around the ankle in opposite directions crossing behind and above the heel (B). Thread the ends under the folds which form the sides of the stirrup on each side (C). A free end now hangs from each side of the foot (D). These form the traction bands. Carry these ends over the notched end of the splint and tie with a square knot.

Form a Spanish windlass by inserting a stick about 6 inches long between the traction bands. Twist the bands with the stick until all slack has been removed and strong traction is established.



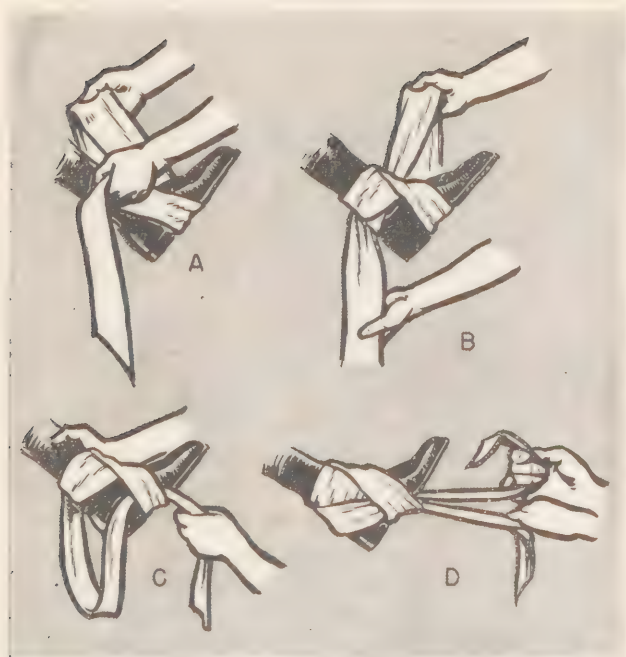


FIGURE 23

Then anchor the stick to keep the band from unwinding by tying the ends of the stick to the sides of the splint.

Support the limb in the splint as illustrated in figs. 24 and 25. Hang the center of a cravat over

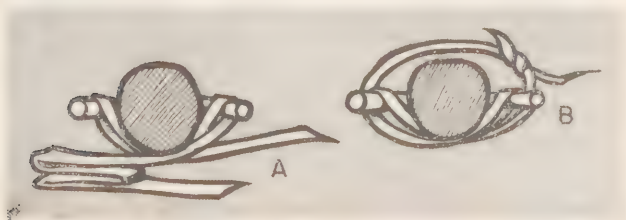


FIGURE 24



FIGURE 25

the outside bar. Pass the end toward the leg, under the leg, and up between the leg and the inside bar (A). Take one end in each hand and draw outwards sufficiently to take any sag out of the leg. Pass the ends under the leg in opposite directions and tie at the outside bar (B). Five such bandages should be applied: (1) Just below the crotch, (2) just above the knee, (3) just below the knee, (4) at the middle of the lower leg, and (5) at the ankle (fig. 25B).

After the leg has been splinted the heel must not touch the ground. A cord may be tied at the end of the splint and the leg and splint suspended or the end of the splint may be placed on some bricks, stones, block of wood, curbstone or similar object. Most stretchers are provided with sup-

ports for splints of this type. If no support is provided the limb must be suspended during ambulance transport by a stout cord tied to the end of the splint.

*Improvised fixed traction splints for the lower extremity.*—Improvised fixed traction splints may be made from boards. For the lower extremity the board should be not less than 4 inches wide and should be 2 feet longer than the leg.

Cut a U-shaped notch in both ends of the board. Slip the middle of a cravat bandage into the crotch, bring the ends around the thigh and tie together with a square knot so that a loose loop is formed. While pulling firmly on the leg apply a traction hitch to the foot as described on page 37. Place the board on the outside of the leg and slip the looped cravat bandage into the notch in the upper end of the board. Then tie the traction bands over the notch in the lower end of the board. Apply traction by inserting a short stout stick between the two traction bands and twist until all slack has been taken up and strong traction established. Tie cravat bandages firmly but not tightly around the leg and splint, (1) at the crotch, (2) just above the knee, (3) just below the knee, (4) half way from the knee to the ankle, and (5) at the ankle.

After application of the splint do not allow the heel to touch the ground. (See p. 39 under Keller-Blake Splint.)

*Fixed traction for the upper extremity.*

The Murray-Jones or the Thomas arm splint (fig. 26 A) is a fixed traction splint for the arm. It should be used for any fracture from the shoulder to a point halfway from the elbow to the wrist. It may be applied without removing clothing.

One operator grasps the wrist and applies steady, gentle traction, at the same time straightening the limb to a position as nearly normal as possible. The operator shifts his hands one at a time so the ring of the splint may be threaded over the victim's hand and passed up the arm until the lower part of the ring fits into the armpit. When the

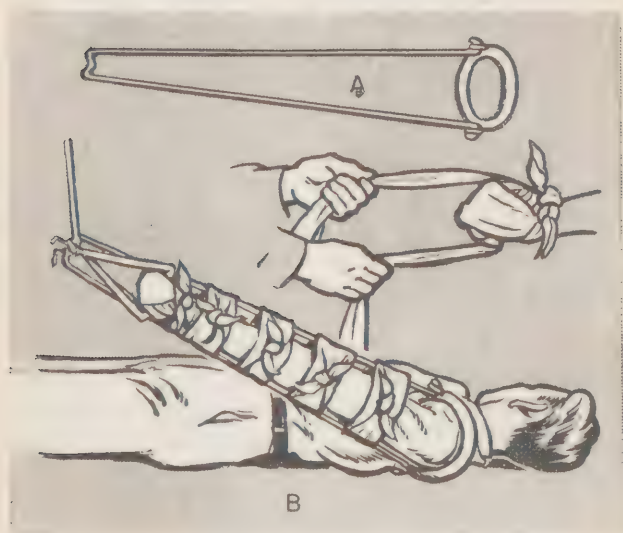


FIGURE 26

splint is in proper position the arm extends down between the sidebars with one bar on the thumb side and the other bar on the little finger side with the palm toward the victim's side.

*Traction hitch* (fig. 27).—Roll a stick, about 4 inches long, in a triangle bandage so that a long

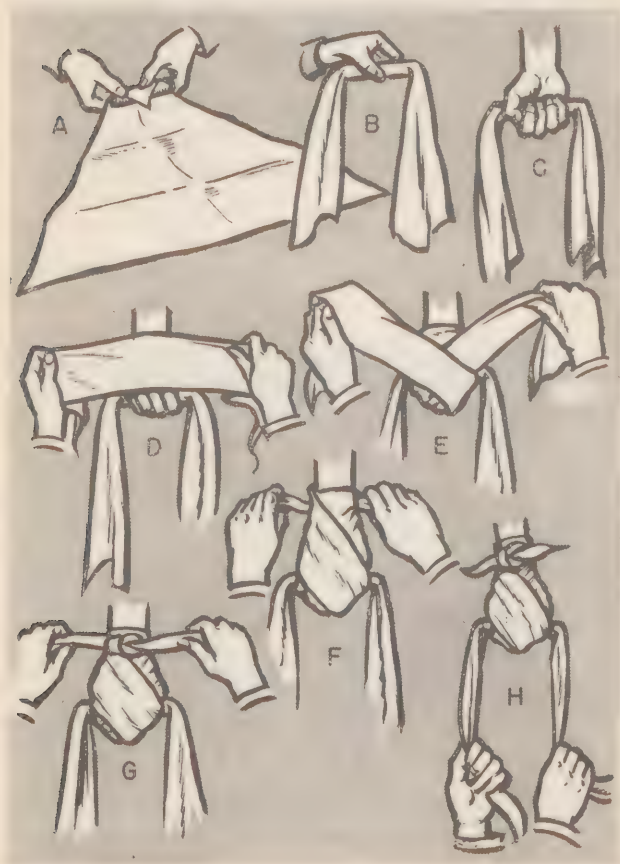


FIGURE 27

tail hangs from either end (A and B). Place the wrapped stick crosswise in the palm of the victim's hand, fold his fingers around it allowing the bandage ends to hang down (C). Place a cravat bandage on the back of his wrist (D), pass the ends around the wrist, cross them on the back of the hand, then bring them over the fingers snugly (E). Carry the ends to the palm side of the wrist (F), tie a single knot, bring the ends to the back of the wrist and tie a square knot (G), completing the hitch (H).

The bandage ends hanging from the ends of the stick form the traction bands. The traction bands are tied in a square knot over the notch at the end of the splint, with enough pull to maintain traction.

Bring the arm to as near normal length as possible using the opposite arm as a guide.

To keep the arm from moving in the splint, cradle it as follows: Hang a cravat bandage by its center over the outside bar. Pass the end toward the arm under the arm and up between the arm and the inside bar (fig. 24A). Pass the ends under the arm in opposite directions and tie at the outside bar (fig. 24B). Cradle the arm in this manner, (1) just below the armpit, (2) just above the elbow, (3) just below the elbow, and (4) just above the wrist.

*Improvised fixed traction splint for the upper extremity.*—A board at least 4 inches wide and 2 feet longer than the arm is used. Cut a U-shaped notch in each end. Tie a folded triangle bandage around the arm so that it forms a loose loop in the armpit with the tied ends over



the upper part of the shoulder. Apply a traction hitch to the hand as described on page 42. Insert the notch in the upper end of the board into the loop, applying the board to the outer surface of the arm. Bring the traction bands from the hand over the notch at the lower end of the splint. With one hand pull firmly on the wrist. With the other hand grasp the traction bands and push upward, pulling the bands through the notch, to make firm traction. Pass the ends around the board and tie. Encircle the arm and splint twice with folded triangle bandages and tie snugly (1) at the armpit, (2) just above the elbow, (3) just below the elbow, and (4) just above the wrist (fig. 26B).

*Other types of improvised splints.*—The most common form of improvised splint is a thin piece of board, which should be well padded before it is applied to the limb. The splint must be long enough to immobilize the joints above and below the fracture. The splint may be padded with plenty of cotton, a blanket, a pillow or some similar material. Splints must be applied to the inner and outer surface of the limb in such a manner that the limb will not twist inside the splint. In the case of the lower leg this may be done by having the upper end of the splint well above the knee and the lower end extend beyond the foot. Tie the splint firmly to the affected part, using cravat bandages (fig. 29).

*Fracture of the lower half of the forearm and of the hand or fingers.*—Apply well padded wooden splints extending from the elbow to the finger tips on the front and back of the forearm and hand. Hold these in place by encircling

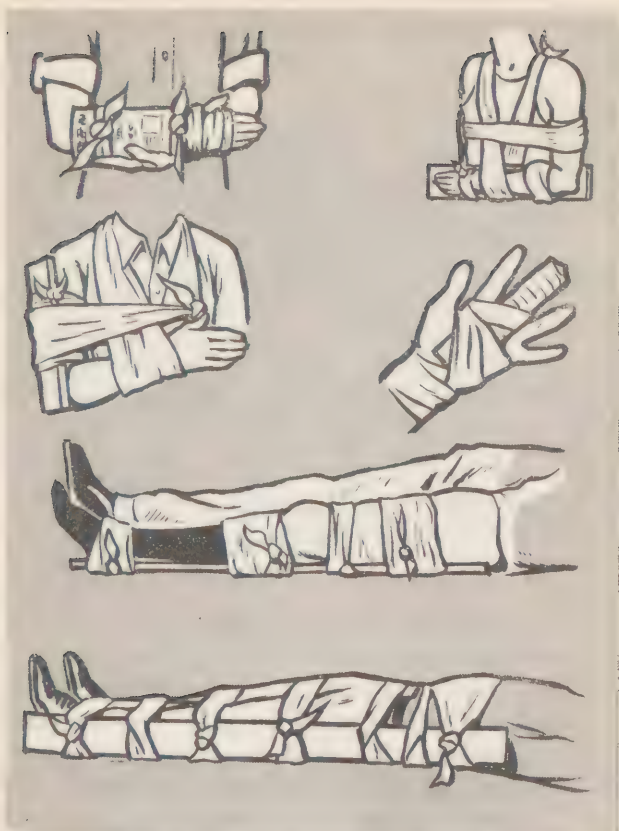


FIGURE 28

them with 3 cravat bandages. Support the forearm and hand in a sling (fig. 28).

In the absence of a piece of wood, a newspaper, telephone book, or piece of linoleum or some other material which is rigid when folded or rolled may be applied with suitable padding between it and the part.

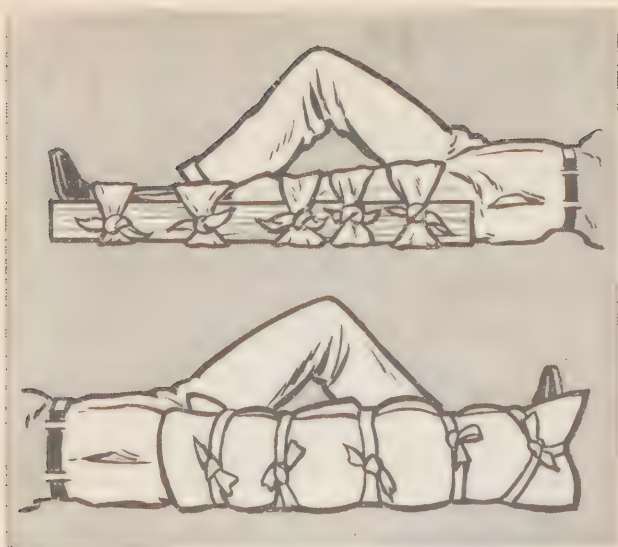


FIGURE 29

One of the great dangers in splinting of fractures is that the ties used to hold the splint to the part will be so tight that the circulation of the blood is cut off. After applying a splint examine the fingers or toes, as the case may be, every 15 or 20 minutes. If they become blue, loosen the ties to permit a return of circulation.

*Fracture of the pelvis.*—If after injury in the region of the hips or loins a casualty shows no



FIGURE 30

signs of damage to the legs but is unable to stand or even move his legs without pain or difficulty, it must be assumed that the pelvis has been fractured.

*First aid.*—Place the victim in the position in which he is most comfortable, raising or lowering his legs as he desires. Preferably he should be on his back with the legs straight but this is not essential. Apply a wide cravat bandage around the hips so that it is firm enough to give support but not tight enough to press broken bones inward. Tie both ankles and knees together with cravat bandages (fig. 30). Move him as described for a person with a broken back. (See p. 34). He should not be allowed to pass water.

### ***Moving Fracture Cases from Points of Danger***

It may be necessary to move a fracture victim from a spot of great danger in order to save his life. An example might be a person in burning wreckage, close to a wall which is about to collapse, near a bomb which may explode, or in the way of traffic which must be kept moving. Under such conditions the victim should be prepared for removal from the danger zone as follows:

1. *Fracture of arm or collar bone.*—Place a sling in position, lay the forearm across the chest with the fingers toward the other shoulder, complete the sling. Then place a broad bandage gently but firmly around the body and the arm (fig. 31). Move the person in a lying position on a stretcher.

2. *Fracture of leg.*—Tie the feet and the knees together with bandages, letting the good leg sup-



FIGURE 31

port the broken one. If possible, get a board the length of the leg and bind it to the side of the fractured leg with wide bands going around both legs and the board. Transport in a lying position with great care.

Remember that these procedures are not best for the injured and are to be only used in emergencies where it would be unsafe to delay long enough to apply a fixed traction splint. As soon as the victim has been moved to safety a fixed traction splint should be applied.

*Dislocation.*— Do not try to reduce a dislocation, but immobilize by splinting and take to a physician. Dislocated shoulder is best immobilized with a Murray-Jones traction splint.

## CHAPTER IX

# ARTIFICIAL RESPIRATION

### ***Common Causes of Arrested Breathing or Asphyxia***

1. Electric shock.
2. Carbon monoxide poisoning (illuminating gas, exhaust gas, or coal gas).
3. Drowning.
4. Concussion from explosions, or from blows on the head or abdomen.
5. Suffocation or strangulation due to external obstruction of the air passages.
6. Foreign bodies in the throat or windpipe, which obstruct the air passages.

A person who has stopped breathing from any of these causes must be made to breathe at once or he will die. Do not waste time on unnecessary things but get to work immediately, using the prone pressure method of artificial respiration. Get the victim into fresh air, clear the mouth or throat of any obstructions, and proceed as follows:

### ***Standard Technique of Prone Pressure Method***

1. Lay victim on his belly, one arm extended directly overhead, other arm bent at elbow. Turn face toward extended arm, resting the head on hand and fingers of bent arm so that nose and mouth are free for breathing and may be seen by the operator (fig. 32).

2. Kneel straddling the victim's thighs, with your knees just above his knees, adjusting your position so that you can comfortably lean

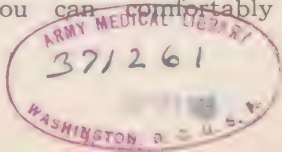






FIGURE 32

forward and place the palms of your hands on the lower part of his chest with the little fingers resting over the lowest ribs. Your wrists should be about four inches apart.

3. With your arms held straight, swing forward slowly, so that the weight of your body is gradually brought to bear upon the victim. Your shoulders should be directly over the heels of your hands at the end of the forward swing. This operation should take about two seconds. Do not bend your elbows.

4. Quickly swing backward so as to remove pressure completely.

5. After two seconds swing forward again. Repeat steps 3 and 4 regularly 12 to 15 times a minute.

6. Continue artificial respiration without interruption until natural breathing is restored—for hours, if necessary—or until a physician declares victim dead.

7. Have an assistant loosen tight clothing about the victim's neck, chest or waist. *Keep victim warm.* Do not give him any liquids by mouth until he is fully conscious.

8. Keep victim lying down after he revives to avoid strain on his heart. He should be given hot tea or coffee to drink after he is fully conscious.

9. Resuscitation should be carried on as near as possible to where victim received his injuries. Should it be necessary to move the victim from the point of the accident, artificial respiration should be carried on during the time he is being moved. He should not be moved again until he is breathing normally, and then moved only in a lying position.

10. After a temporary recovery of respiration the victim may stop breathing again. He must be watched and if natural breathing stops, artificial respiration must be resumed at once.

11. In carrying out resuscitation it may be necessary to change operators. This change must be made without losing the rhythm of respiration.

The pressure exerted by the forward swing must be regulated to meet the comparative sizes of operator and victim. Too much pressure is harmful, and the tendency is always to press too hard in an effort to make the victim breathe. The pressure empties the used air from the chest. An inrush of fresh air takes place in the rest interval when no pressure is being exerted.

Pressure must be in the correct place to force air from the chest. Make sure that your hands are in the proper position and that they do not get too low.

Be sure that the nose and mouth are free of obstruction so that air can pass in and out. If frothy bubbles collect in the mouth, they should be wiped out by an assistant.

Keep the victim warm. Blankets, wraps, or even newspapers should be wrapped around him. You can continue to work through this covering without exposing the victim to the wind.

Only by continued practice will you be able to give artificial respiration effectively under the excitement of an emergency. Therefore you should practice regularly on any willing subject. Never give up. Many persons have been revived after hours of work. Alternate with other workers when you are fatigued. Stop only when the victim has revived or the case has been taken over by a physician.

## CHAPTER X

# TRANSPORTATION OF THE INJURED

Do not move an injured person if it is unsafe to do so. Before moving him be sure that (1) bleeding is stopped; (2) he is breathing; (3) he is warm; (4) all fractures have been splinted.

The journey to the hospital is frequently the one thing that accident victims remember. Rough, careless or unnecessary handling may cause shock and result in death. *Be gentle and go slowly.*

### ***Stretcher Bearing***

All persons trained in first aid should be thoroughly drilled in stretcher bearing. In the event of a civilian war disaster, persons trained as stretcher bearers will assist Rescue Squads by transporting casualties to the nearest First Aid Post, Casualty Station or other place of safety.

Lifting an injured person onto a stretcher is the first step in transportation. Get all the help you need. Have the stretcher ready, with blankets in place. Arrange the blankets so that there are four thicknesses underneath to two on top.

*Placing blankets on a stretcher* using two blankets (fig. 33).

Fold a blanket into thirds lengthwise. Place blanket on the stretcher and turn the upper fold back so it hangs off one side. Fold the second blanket in thirds, place it on stretcher in such a

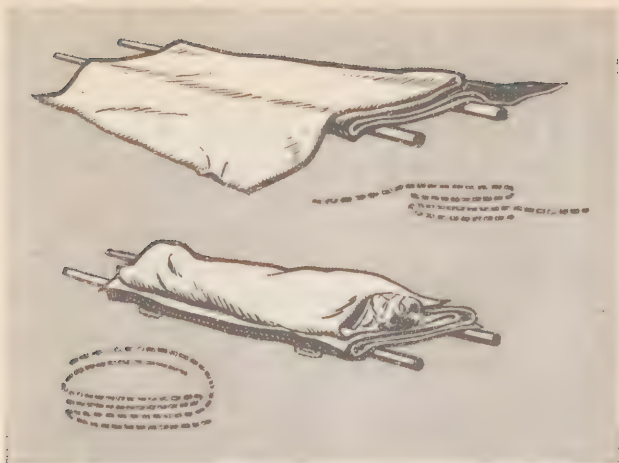


FIGURE 33

way that when the upper fold is turned back it hangs from the opposite side. Place the victim on the stretcher. Turn the hanging fold of the second blanket over him. Then turn the hanging fold of the first blanket over him. By this method the victim has four thicknesses of blanket under him and two over him.

### ***“Lifts and Carries”***

Seriously injured persons must be lifted very carefully. If possible get six or eight assistants, who line up three or four on each side. All take orders from the leader so that they will move together. Orders should be clearly given and explained when untrained persons are helping.

1. “Kneel on the knee nearest the victim’s feet.”

2. “Slip your hands under the victim’s body, until your fingers meet those of the man opposite you” (fig. 34).

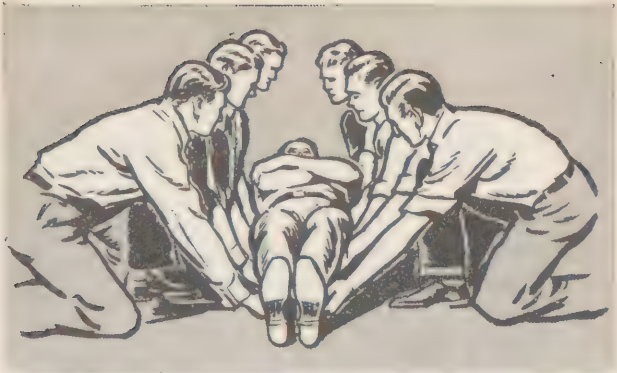


FIGURE 34

3. "All together, *Lift.*" The victim is lifted to the level of the knees, and another assistant slides the stretcher between the two rows of bearers. If no one is available to place the stretcher, the bearers will continue the lift until all are standing, and then step sideways to the stretcher, which has been placed at the feet of the victim.

4. "All together, *Lower.*" Gently and carefully the victim is lowered to the stretcher.

When only three bearers are available, all lift from the same side, one supporting the head and shoulders, one the waist and hips, the third the knees and ankles (fig. 35). They kneel, slip their hands under the victim, get a good hold and lift on command, resting the victim on their raised knees, to get a better hold. Then rising to a standing position, they walk to the stretcher.

When only two bearers are available, carries are limited to short distances (figs. 36 and 37). Even with a stretcher two bearers are rapidly fatigued with a victim of equal weight.



The one-man lifts and carries, such as the fireman's carry and the pack-strap carry, are exceedingly dangerous for both victim and bearer, and should not be used if it is possible to wait for help.

Persons with back or neck injuries or suspected fracture of the spine must not be picked up, but



FIGURE 35

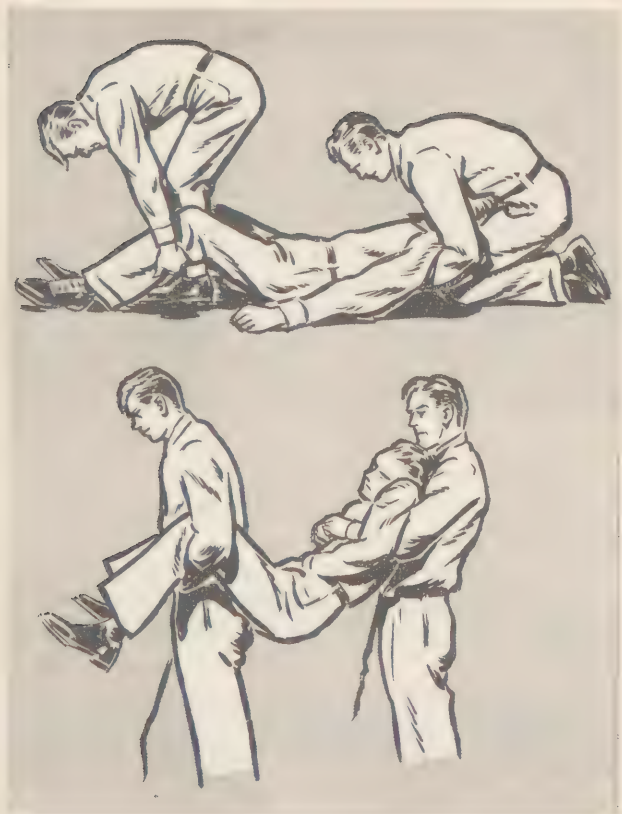


FIGURE 36

must be kept flat and rolled or slid onto a door or board, which is then lifted to a stretcher (see p. 32).

### ***Stretchers Are of Several Types***

1. Army stretcher—poles and canvas, with metal braces to spread sidepoles, and metal stirrups which serve as legs to raise it off the ground (fig. 38).



FIGURE 37

2. Navy stretcher— metal basket.
3. Industrial type— canvas with wide hems at sides through which poles are slid.

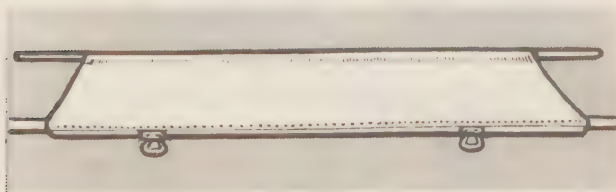


FIGURE 38

4. Improvised blanket stretcher (fig. 39), made with blanket folded in thirds over poles. Place a pole a little longer than the blanket about a foot from the center of the blanket. Fold the short side of the material over the pole toward the other side. Place the second pole on the two thicknesses about two feet from the other pole and parallel to it (A). Fold the remaining side of the blanket across the second pole toward the first (B). When the injured is placed on the blanket

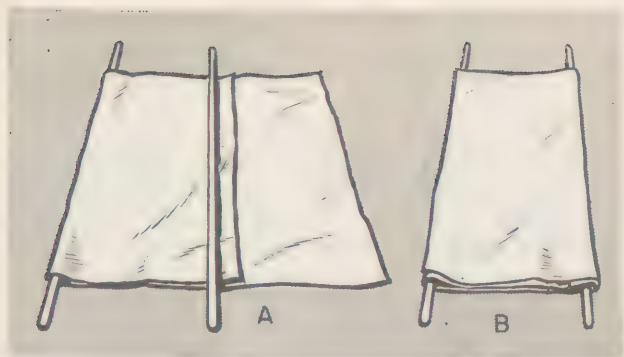


FIGURE 39

the folds of the blanket are locked by the friction exerted by the weight of the body.

5. Blanket, without poles, with edges rolled toward victim. Place a blanket on a flat surface (floor or street) and starting from the edge roll the blanket in a tight roll from each side toward the center until all the blanket except for a strip two feet wide down the middle has been rolled. Place the victim on the unrolled part. The rolled part forms a satisfactory grip. Six bearers are necessary. One pair supports the shoulders and head, the second the abdomen and hips, the third the lower extremities (fig. 40).

6. Door, shutter, ladder with boards, or chair. Any flat surface large and strong enough to support the body may be used for a stretcher. There will be considerable discomfort if the victim is carried on a hard surface for any distance and padding should therefore be provided if available.

In using a chair for a stretcher the straight-backed variety is best. Seat the victim in the chair. The chair is tipped backwards onto its



FIGURE 40



FIGURE 41

back legs. Bearer number one lifts by the front legs and bearer number two by the back of the chair, the patient being in a semireclining position.

A satisfactory stretcher may be improvised by using three or four jackets or coats and two poles. The jackets may be turned inside out and two poles are passed through the sleeves. The flaps are then turned down around the poles and buttoned underneath (fig. 41). Be sure to test the strength of the stretcher before loading it.

Before loading a stretcher, find out whether it will clear corners and narrow winding passages. The victim should be lashed to the stretcher with several cravat bandages if it is necessary to turn the stretcher up on edge or set on end to get around difficult passages or stairways.

Trained stretcher teams will load stretchers into ambulances and trucks at First Aid Posts and Casualty Stations.

When a truck stops suddenly, everything tends to slide forward. To avoid injury to the victim's head he should ride feet first, unless he has a fractured leg. In double-deck ambulances or trucks the upper stretchers are loaded first, and then the lower ones slid under them. Lower tier stretchers are unloaded first.

For their own benefit and to help maintain public morale, injured persons should be removed promptly from the scene of an accident.



## CHAPTER XI

# CHEMICAL WARFARE

### **War Gases**

Irritant and poisonous chemicals which can be released as gases, smokes, or liquid sprays are called war gases.

Those rendering first aid must be able to recognize gas cases so that they may take the necessary precautions to avoid contamination of themselves and others. Avoid inhaling the fumes. Wear a gas mask. Protective clothing and gloves must also be worn when caring for cases contaminated with persistent gases.

War gases may be—

Liberated from cylinders and carried by wind.

Liberated from exploding bombs, shells, or grenades.

Liberated from planes as sprays.

They act after—

Being inhaled by the victim.

Coming in contact with the skin, eyes, or nose.

### **Types of Gases**

#### *I. Nonpersistent gases.*

*Prevention of injury.*—(1) Masks. (2) Walk against the wind to get out of contaminated zone.

##### *A. Tear gases or eye irritants—*

*Odor.*—Like apple blossoms, or like sour fruit.

*Effects.*—Burning pain in the eyes; the eyes flood with tears; victim may be unable to open his eyes.

*First aid.*—Generally no treatment is necessary. Do not rub eyes. Do not apply bandage to eyes. In severe lasting cases irrigate the eyes

with a solution containing 2 level teaspoonsful of baking soda in half pint of warm water.

*B. Sneeze gases or nose irritants.*

*Odor.*—Slightly like coal smoke. May be yellowish, grayish cloud without odor.

*Effects.*—Aching pain in head, face, nose, throat, chest. Sneezing and coughing. Sometimes vomiting. Mental depression—may even attempt suicide. Effects severe but temporary.

*First aid.*—Flush nose and throat with weak solution of baking soda (sodium bicarbonate)—(2 level teaspoonsful to half pint of warm water), or breathe fumes of bleaching powder in a wide mouth jar. Reassure victims that symptoms are only temporary. Try to allay fear and avoid panic. Prevent suicide.

*C. Choking or lung damaging gases.*

*Odor.*—May smell like new cut hay or mouldy hay, pungent and disagreeable or may have sweetish odor.

*Effects.*—In low concentrations—brassy taste, headache. Effects delayed but serious. Soreness in lungs, coughing.

In higher concentrations—coughing, throat spasm, retching, tight feeling in chest, blueness of face, increased pulse and breathing rate. Victim may collapse during exercise without previous warning.

*First aid.*—*Absolute rest for 48 hours is essential even when no symptoms appear.* Keep victim lying down and transport on a stretcher. Do not permit him to walk to first aid post even though he may insist that he is able to do so. Keep him warm. Do not give artificial respiration in hope of relieving difficult breathing, as it may do serious damage. Hot

coffee or tea may be given. *The victim should not be permitted to smoke.*

*D. Systemic poisons.*

*Odor.*—Bitter almond, rotten eggs, garlic.

*Effects.*—Slight headache, loss of consciousness, convulsion, may stop breathing.

*First aid.*—Remove to fresh air, give artificial respiration if needed, treat for shock,

II. *Persistent gases (blister gases).*—Cling to clothing, plants, implements and other objects for long periods, and injury may result from contact with such contaminated surfaces.

*Prevention.*—(1) Masks. (2) Gas-proof clothing. (3) Avoid contaminated surfaces. (4) Decontamination (Persons injured with persistent types of gas must be decontaminated before they are mixed with other casualties). (5) Avoid low places such as basements.

*Odor.*—Like geraniums, then biting (Lewisite). Like garlic or horseradish (Mustard).

*Effects.*—Burning of eyes with acute inflammation. Itching, burning, and blistering of skin. Severe pain in chest and brassy cough if breathed, vomiting and pain in stomach and abdomen if swallowed. Extremely powerful, persistent, and dangerous. Onset of action may be delayed as much as 24 hours but treatment must be prompt to be effective.

*First aid.*—Act quickly. Degree of burning depends upon promptness of First Aid given. (1) All contaminated clothing must be removed before any treatment is given. Otherwise the burning will continue. Clothing removed should be placed to one side and sent for decontamination later. Fresh clothing should be supplied the victim. (2) Irrigate the eyes with 2 level tea-

spoonsful of baking soda in half pint of warm water. (3) Daub (don't rub) skin with cloths moistened in benzene, kerosene, alcohol or ether, or with straight gasoline (not ethyl) or carbon tetrachloride (pyrene).<sup>3</sup> Wash off with running water and soap. (4) Before the skin becomes red, bleaching powder (chlorinated lime) made into a cream paste with water will neutralize the gas if applied to the skin. It must be washed off in a few minutes. Bleaching powder should not be used after redness appears. (5) Great care must be used in handling the victim and his clothing to avoid injury to others. (6) Wear mask, protective clothing and gloves.

### **Incendiaries**

#### *Phosphorus shells or bombs.*

*Odor.* White smoke from phosphorus smells like matches.

*Effects.*—The smoke alone may give a mild prickling sensation but is harmless. However, when a phosphorus bomb explodes, particles of phosphorus may strike the skin and cause severe burns, which heal very slowly.

*First aid.* The phosphorus particles must be removed before giving the usual care for burns since phosphorus continues to burn unless removed. Immerse the wound in hot water, which melts the phosphorus, so it may be wiped out with a gauze pad. Particles may be removed by squeezing as for a pimple. If cold water is used, the particles will not melt, and because phosphorus will re-ignite on exposure to air, they must be picked out under water. If available, copper sulphate solution (2 to 5 percent) may be applied;

<sup>3</sup> The fumes of many of these solvents are explosive, therefore avoid sparks, cigarettes, or flames during this procedure. Destroy used cloths or cleaning tissue by burying or burning in open air.

this coats the phosphorus with copper and stops burning. The particles can then be lifted out. After either method of removal treat as for an ordinary burn. (See p. 26.)

## CHAPTER XII

# MISCELLANEOUS CONDITIONS

### *Injury from Heat and Cold*

Enemy attack may occur at any season of the year. Both victims and Civilian Defense workers may be exposed to rain, snow or freezing temperatures for hours on end. Firemen and Rescue Squads may be subjected to intense heat in their work. The hard manual labor they must perform in clothing which tends to hold heat increases the danger of injury. It is important that the Civilian Defense first aid worker be able to recognize injuries due to heat and cold so he can administer emergency treatment.

### *Heat Stroke (Sun Stroke)*

It is not necessary that the individual be exposed to the sun's rays to develop heat stroke. Clothing which prevents the escape of heat (gas-proof clothing or firemen's coats and boots), excessive humidity, fatigue, particularly in the absence of a current of air, increase the danger of heat stroke.

*Symptoms.*—Headache, dizziness, nausea. The victim may appear flushed or may have a bluish color about the face and lips. He may be unconscious. The body temperature is elevated, the skin is hot and dry.

*First aid.*—For mild cases wrap the victim in a wet sheet and expose to cold drafts of air, as



from a fan. For more severe cases apply ice to the temples and the back of the neck. Place in a cool bath for 20 minutes, at the same time rubbing the limbs and trunk to stimulate circulation.

### **Heat Exhaustion (Prostration)**

Heat exhaustion is a form of shock resulting from exposure to heat. It occurs more frequently when the humidity is high. It is a serious condition requiring prompt first aid treatment.

*Symptoms.*—The symptoms are those of shock: face pale, cold, clammy sweat, weak and rapid pulse, slow respiration.

*Treatment.*—The same as the treatment for shock. (See p. 27.) *Do not confuse this condition with heat or sun stroke.* The treatment is exactly opposite.

### **Heat Cramps**

Persons exposed to intense heat or doing manual labor lose large amounts of salt in their perspiration. As the salt is depleted, muscular cramps may develop.

*Symptoms.*—Spasmodic cramps of the muscles of the abdomen and limbs.

*First aid.*—Prevention is more important than treatment. Men at hard work in high temperatures drink large amounts of water to replace the fluid lost in perspiration. The salt lost in the perspiration should be replaced by adding a good-sized pinch of table salt to each glass of water.

After the condition has developed, treatment consists of warm baths, rest, drinks to which salt has been added. If the cramps are severe or persist, a doctor should be called.

### **Frostbite**

Frostbite is more likely to occur in damp and windy weather.



*Symptoms.*—There is tingling of the skin followed by numbness. As the part becomes numb it takes on a dead whiteness. At this stage the tissues are not actually lifeless, though they may soon become so, even in warm atmosphere. The skin may then appear reddened or purplish and it may crack. Very large blisters are ordinarily formed.

*First aid.* Have the victim exercise the part if he can. Do not massage it. Allow the water temperature to rise slowly. To obtain the best results the thawing process should be drawn out for several hours. Do not break any blisters. Apply a sterile dressing to the part and take the person to a doctor.

### ***Carbon Monoxide Poisoning***

There is serious danger of carbon monoxide poisoning in modern warfare. Bombs exploding near a building or home may cause collapse or blocking of a chimney or flue so that carbon monoxide gas escapes into the house from the furnace. Illuminating gas has a high content of carbon monoxide and its escape through disrupted gas mains is a serious hazard. When a bomb explodes a large amount of carbon monoxide gas may result from incomplete combustion of the explosive.

The gas is odorless, colorless and tasteless. It may produce death even in low concentrations if breathed for some time. In high concentrations it may produce death in a few minutes. The body stores carbon monoxide. People doing manual labor breathe faster than those at rest and tend to be overcome more rapidly.

Carbon monoxide poisoning steals upon the

victim in such a way that he may be overcome by the gas without warning.

*Symptoms.*—The symptoms are numerous, the more pronounced being headache, yawning, giddiness, ringing in the ears, weariness and a fluttering or throbbing of the heart, which is a late symptom. If the victim gets into fresh air these symptoms usually pass off, often leaving a headache. If the victim remains in the presence of carbon monoxide gas his legs collapse under him, he may stagger and sink to the ground in a semiconscious or unconscious state.

*First aid.*—

1. Remove the victim to fresh air as quickly as possible.

2. If breathing has stopped, is weak and intermittent, or is present only in occasional gasps, start artificial respiration at once, using the prone pressure method. If oxygen is available it should be given while artificial respiration is administered.

3. Aid circulation by rubbing the limbs, keeping the victim warm with blankets and hot water bottles.

4. Keep the victim at rest, lying down to avoid any strain on the heart.

Inhalations of oxygen for 20 minutes, when given immediately, decrease the possibility of serious after-effects. Oxygen should be given to all victims if possible.

***Unconsciousness***

Anyone who is unconscious is in a serious condition and should have immediate medical attention. Before the doctor arrives there are certain things which those trained in first aid should do:

A. *Bleeding?*—If so, control the bleeding and dress the wound.

**B. *Breathing?*—“Blue unconsciousness.”—**

If not breathing, with a bluish or blotched face, start artificial respiration at once. Be sure there is no obstruction in the throat. Be careful of electric shock if the victim is found in contact with wires, plumbing or heating pipes or other conductors which may have become temporarily charged. Do not expose yourself to electric shock by careless handling of the victim. Be careful of carbon monoxide gas and do not become a victim yourself. Remember that persons not breathing become chilled very rapidly and must be kept warm during artificial respiration.

**C. “Red unconsciousness.”—**Red face and strong pulse. Keep victim lying down, head slightly raised, cold applications to head, give no stimulants. Prevent chilling, and transport in lying position.

**D. “White unconsciousness.”—**The same as shock. (See p. 27.)

## **PROBLEMS**

1. A man is found near a dangerous wall. His trousers are saturated with blood. His life is in danger both from severe hemorrhage and from the wall, which might collapse at any moment. There is a wound of the thigh.

2. A fireman has slipped down a ladder and has a long splinter in his leg. He wants to walk to the first aid post.

3. A casualty is found in a partially wrecked basement. She is in great pain. Her thigh and foot are turned outward. To bring her to the first aid post she must be taken up a narrow winding flight of stairs.

4. A man is found lying in the street. His foot has been blown off at the ankle. He is bleeding from the wound profusely.

5. A man is struck on the hand by flying debris. There is a fracture of the wrist and profuse bleeding from the palm of the hand.

6. A woman is struck by some flying glass. She is bleeding profusely from a point just above the wrist.

7. A man is struck on the arm by flying masonry. There is pain at the site of the injury but no blood. The victim cannot move his arm.

8. A casualty is wandering around with a severe wound of the head. He assures you he feels all right and some friends have volunteered to take him home.

9. A man is found unconscious beside some fallen masonry. Blood stained material is draining from his ear.

10. Some debris falls on a man's back while he is standing beside a building. He admits some discomfort but insists he will soon be all right. He says he can stand and wants to go home. Examination reveals nothing to account for his discomfort.

11. A girl tells you debris fell across her abdomen. Examination reveals no wound. She is cold, pale, and restless, has sighing breathing and is inclined to yawn. Her pulse is weak and rapid. Her lips are bright red.

12. A man has touched a live wire and is unable to let go. He is not breathing.

13. An exploding boiler has scalded a man from head to foot. He is in great pain. Onlookers are urging you to do something quickly and are offering advice.

14. A middle-aged man has a small wound in the region of the hip joint. The wound has blackened edges and has evidently been made by a bomb fragment. He is too deeply shocked to speak. He has his hands clutched across his abdomen as if he had great pain in that region.

15. A man lies motionless. You cannot feel his pulse or detect breathing. The body is cold and the eyes are opened and staring. There is a wound on the back of the head which has stopped bleeding.

16. A woman complains loudly that she has been seriously injured and is in great pain. Examination reveals only a few slight bruises.

17. A rescue squad has removed a man from fallen debris. His chest was severely crushed. He is bleeding slightly from the mouth. He appeals for water and a cigarette.

18. A fireman complains of weakness and nausea. His face is flushed; his skin feels hot and dry.

19. A member of a rescue squad is removed from a basement where he has been working. He is unconscious and is not breathing. Those who removed him tell you there was an odor of illuminating gas in the basement.

20. A man suffering from severe hemorrhage from the leg was found in a concentration of blister gas. He is not wearing a gas mask.

21. A man who has been near a concentration of mustard gas says he felt some splashes about half an hour before. He complains of no discomfort.





**OFFICE OF CIVILIAN DEFENSE**  
**WASHINGTON, D. C.**

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*A Handbook for*

# AUXILIARY FIREMEN



*United States*

**OFFICE OF CIVILIAN DEFENSE**

*Washington, D. C.*



***Handbook for***  
**AUXILIARY  
FIREMEN**



***Prepared by the Training Section U. S. Office  
of Civilian Defense***

***Approved by the Advisory Committee  
on Fire Defense***

***United States***  
**OFFICE OF CIVILIAN DEFENSE**

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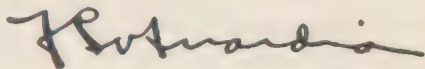
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# ORGANIZATION OF AUXILIARY FIREMEN

Fire fighting is one of the most important factors in the program for civilian defense. In the event of attack a 2-pound incendiary may do more damage than a 2,000-pound explosive. An open and forthright attack, however, is not the only means by which serious damage may be inflicted. Widespread sabotage by arson constitutes an increasing element of danger.

Regular fire departments do not have sufficient men or equipment to combat either an incendiary attack or an organized campaign of arson. As the United States Director of Civilian Defense, I urge that auxiliary fire-fighting forces be organized at once. I urge also that the auxiliary forces be trained in fundamental fire-fighting practices. We must provide increased protection against fire --now.

A handwritten signature in dark ink, appearing to read 'F. H. LaGuardia', with a long, sweeping horizontal line extending to the right.

F. H. LAGUARDIA  
*U. S. Director Civilian Defense.*



# INTRODUCTION

By an auxiliary fireman is meant one who has been enrolled by the regular fire department and whose function is to assist the department in the event of an emergency related to the national defense in the manner prescribed by the fire department officer in command.

For the most part the training of the auxiliary fireman must be done locally. To be most effective, the training should be given by experienced firemen who have themselves been thoroughly schooled in fire fighting. Many city departments and many States have acceptable fire training programs. These should be utilized to the utmost both for the training of regular firemen and of the auxiliaries.

The material in this handbook covers, in an introductory fashion only, the job of the auxiliary fireman. It is not intended to supplant existing fire training programs nor is it intended to serve as a substitute for such a program, although it will prove useful where no program is provided. It is designed to help the auxiliary fix clearly in his mind some of the fundamental principles to be followed in fire fighting. It is designed also to give the regular fireman, who may be serving as instructor, a base around which he can organize his instructional materials.

# SPECIAL PROBLEMS

The auxiliary fireman needs much information concerning problems peculiar to his own community. He can obtain this information only by a study of local conditions. He needs to know:

1. The organization, activities, and responsibilities of the fire department, and its relationship to other municipal agencies; the departmental rules and regulations pertaining to all firemen.
2. How the fire-alarm signaling service works. This includes a knowledge of the action taken by the individual firefighter, and by the fire department when a signal is received.
3. The geography of the district. This includes:
  - A. Location of alarm boxes.
  - B. Location of unusual hazards such as chemicals, oils, gases, and refrigerants.
  - C. A study of the layout and conditions of the streets.
  - D. Location of usable hydrants.
  - E. The water system. The auxiliary fireman should become thoroughly acquainted with the various emergency sources of water supply in his sector such as tanks, wells, and swimming pools.



COILING ROPE  
ON GROUND



HOLD COIL IN HAND  
TO START TIE



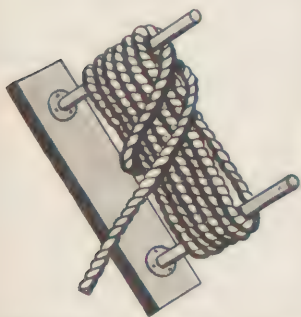
WRAP END OF ROPE  
AROUND CENTER  
OF COIL



PASS LOOSE END OF ROPE  
THROUGH LOOP OF COIL

# USES OF ROPE

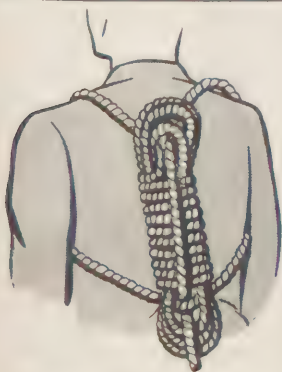
Rope is indispensable in fire fighting. Demonstration and explanation of the uses of rope by the instructors are necessary together with much actual practice by the student. The following knots have widespread usage in fire fighting. You may have need of others. Learn the knots your department believes most essential and practice them until you can tie or untie them in the dark. The knot you tie should be recognizable by another fireman in the dark.



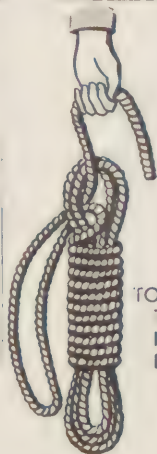
COILING ROPE ON COIL-  
ING RACK



PREPARING ROPE FOR  
BACK CARRY



METHOD OF CARRYING  
ROPE ON BACK



TO DROP ROPE  
TO GROUND  
HOLD LOOSE  
END, DROP COIL

**Half hitch**—the basis of many knots.

**Beckett bend**—for tying two ropes together.

**Clove hitch**—used in hoisting tools.

**Chimney hitch**—for anchoring a rope to a solid object.

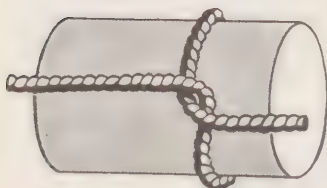
**Rolling hitch**—used to tie hose on top of building.

**Bowline**—used for ladder work or wherever loop on end of line is necessary.

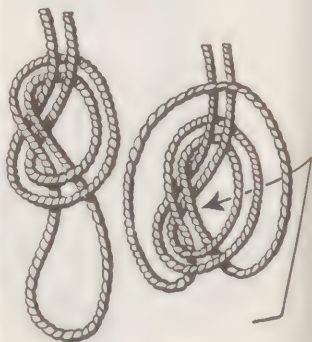
**Bowline on a bight**—for rescue work.

**Sheepshank**—for taking up slack in line.

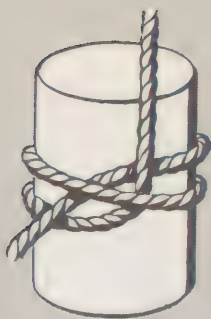
Each of the knots illustrated has more than one use. Practice these and other knots which may be suggested until you become proficient. Learn how to use a rope and how to coil it properly.



HALF HITCH



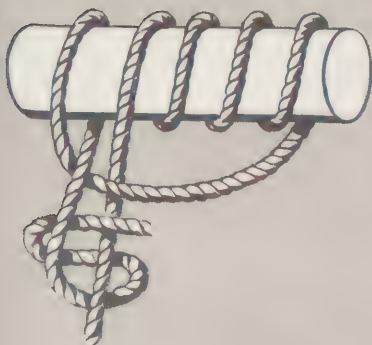
BOWLINE ON A BIGHT



CLOVE HITCH



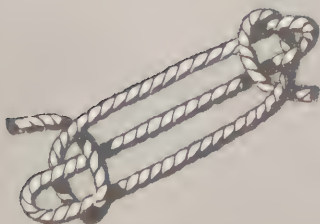
CHIMNEY HITCH



ROLLING HITCH



BOWLINE



SHEEPSHANK



BECKET-BEND





CLOVE HITCH  
& TWO HALF HITCHES



DOUBLE LOOP

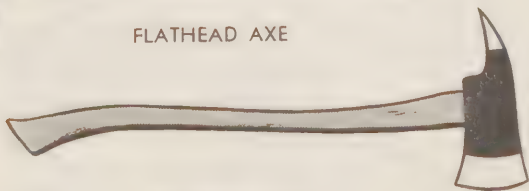
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## TOOLS AND APPLIANCES

Following are illustrated some of the standard tools and appliances used by the fire services. Learn how to use them properly.



FLATHEAD AXE



PICKHEAD AXE



BATTERING  
RAM

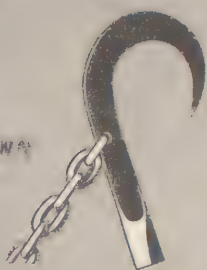


PIKE  
POLE

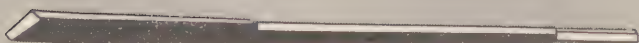


HAMMERHEAD  
PICK

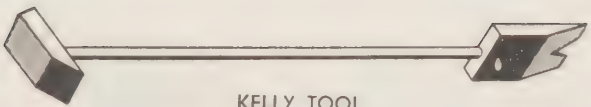
PULL DOWN  
HOOK



WRECKING  
BAR



CROW BAR



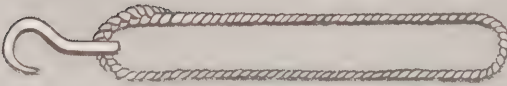
KELLY TOOL



CLAW TOOL



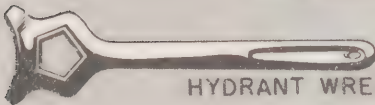
HOSE AND LADDER STRAP



ROPE HOSE TOOL



SPANNER  
WRENCH



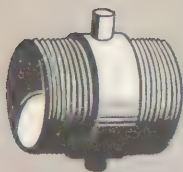
HYDRANT WRENCH



PIN LUG



ROCKER LUG



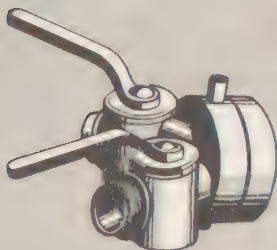
DOUBLE  
MALE  
CONNECTION



DOUBLE  
FEMALE  
CONNECTION



REDUCING  
COUPLING



WYE



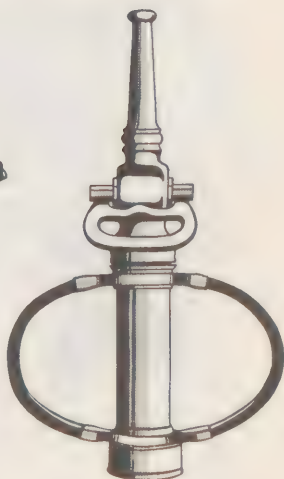
CELLAR  
NOZZLE



SIAMESE



HOSE CLAMP



SHUT-OFF AND NOZZLE

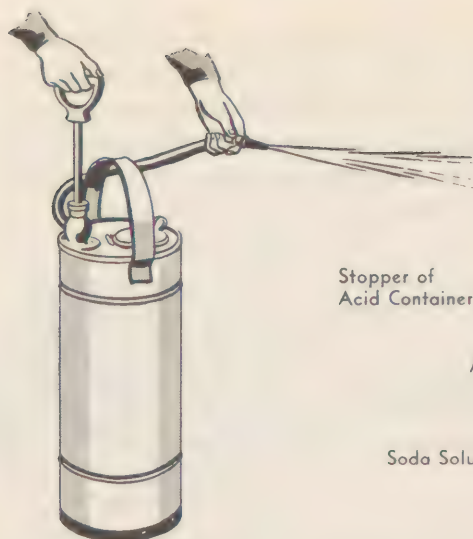
# EXTINGUISHERS FOR SMALL FIRES

It has been said that a pint of water at the proper time is worth more than a reservoir full when a fire is out of control. To extinguish a fire, it is necessary to eliminate one of the three essential factors making the fire possible—fuel, oxygen, or heat. Most small extinguishers absorb the heat, as water will do, or smother the fire by cutting off the supply of oxygen, or employ a combination of these effects.

Extinguishers are most effective in the hands of persons who have had training and experience in their use. Extinguishers must be kept in operating condition by careful maintenance. All types require recharging after use and most types require recharging annually, if not used.



BACK-PACK TYPE WATER-PUMP CAN

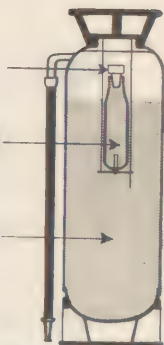


ANOTHER  
TYPE OF  
PUMP CAN

Stopper of  
Acid Container

Acid

Soda Solution



A WATER SOLUTION EXTINGUISHER  
Soda-Acid Type

## **Water Pump Cans**

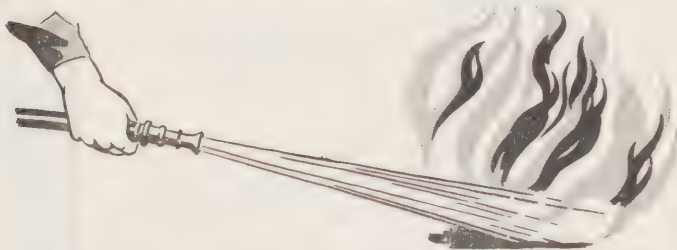
Portable water pump cans, usually carrying 4 gallons of water, can be used effectively for small fires. They are equipped with a hand pump capable of discharging a stream of water from the nozzle to a distance of 10 to 30 feet.

## **Water Solution Types** (Soda-acid, Plain Water, Antifreeze solution, Loaded Stream.)

These extinguishers look much alike and are similar in operation. The commonest size is  $2\frac{1}{2}$  gallons capacity. The soda-acid type has a chemical solution employing bicarbonate of soda and sulphuric acid. The acid is in a bottle in the



top of the extinguisher and the soda is dissolved in the water. When the extinguisher is turned bottom end up, the chemicals are thrown together and carbon dioxide is generated. The gas expels the water under pressure forming a stream which is effective for distances of from 30 to 40 feet.



In the other types the pressure to expel the solution is generally obtained from a carbon dioxide cartridge. In addition to turning these bottom up, they must be bumped on the ground. Bumping punctures the cartridge seal releasing the gas.

The soda-acid and plain water types must be protected from freezing but the solutions in the antifreeze (calcium chloride) and the loaded stream types are designed for use in locations where ordinary water solutions would freeze.

Water is the principal extinguishing agent in each of these types. They are particularly suitable for small fires in ordinary combustibles (paper and wood for example) where the cooling effect of water is of primary importance. They are not effective on flammable liquids in open vessels, for example, and should not be used on electrical fires such as

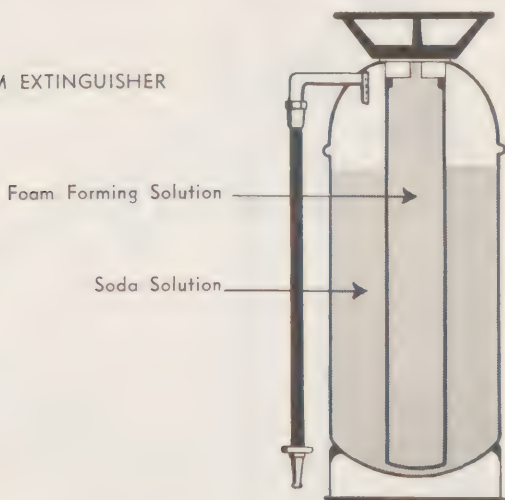
panel boards, switchboards, and motors. The loaded stream type employs an alkali-metal salt solution which is somewhat more effective than plain water on fires in ordinary combustibles and is also useful in fighting fires in flammable liquids.

### ***The Foam Extinguisher***

Foam type extinguishers contain two solutions which are kept separated until the extinguisher is inverted. The chemicals used are bicarbonate of soda, aluminum sulphate, and a stabilizing agent. When the extinguisher is inverted, the chemicals produce not only the foam but sufficient pressure to expel the foam.

The principal extinguishing agent consists of minute bubbles of carbon dioxide gas entrapped in walls of insoluble aluminum hydrate. A blanket of bubbles is formed which excludes the oxygen

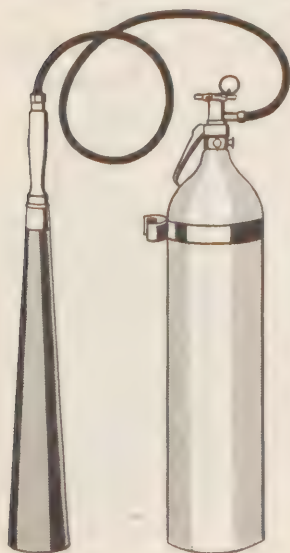
FOAM EXTINGUISHER



and at the same time cools the surface of the burning material. The foam will coat both horizontal and vertical surfaces with a heat insulating layer which clings wherever applied. Foam floats on the surface of water and also on the surface of practically all oils.

The commonest size foam extinguisher has a  $2\frac{1}{2}$ -gallon capacity. It is primarily a water-solution unit and requires protection from freezing. It is effective in fires in both ordinary combustibles, where cooling is needed, and on fires in small quantities of flammable liquids and greases (in vats and open vessels) where the foam may be retained as a blanket to smother the fire.

Do not shoot the foam directly into the fire.  
Apply it at the edge of the burning area, gradually covering and smothering the fire.



CARBON DIOXIDE

## ***Vaporizing Liquid Extinguishers*** (Carbon Tetrachloride)

Since water is a conductor of electricity, its use in fires involving electrical equipment may make conditions worse.

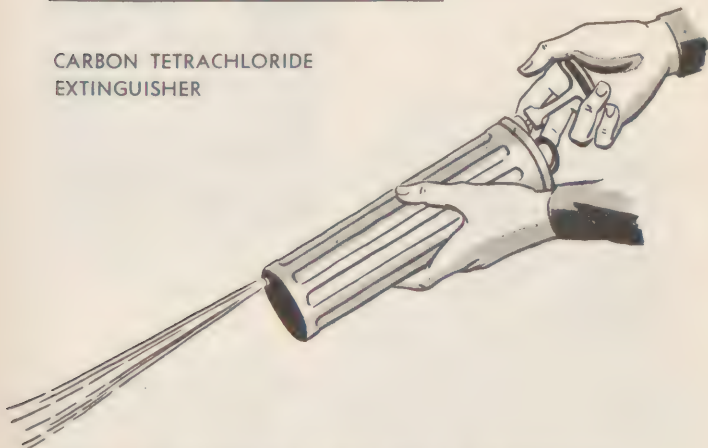
The vaporizing liquid extinguisher expels a stream which is a nonconductor of electricity. It is a nonflammable liquid, principally carbon tetrachloride. Common sizes are 1- to 1½-quart capacity operating by a pump. They will throw a fine stream of liquid 20 to 30 feet.

The liquid vaporizes, forming a blanket of smothering gas, which will effectively smother electrical and other fires.

Apply the liquid around the fire allowing the liquid to vaporize and to act as a blanket.

CAUTION.—Do not use vaporizing liquid extinguishers in a confined space.

CARBON TETRACHLORIDE  
EXTINGUISHER



## ***Carbon Dioxide and Dry Compound Extinguishers***

These extinguishers give off a cloud of smothering gas (plus a suspended inert dust in the case of

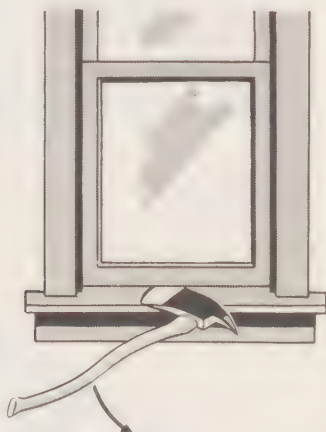
the dry compound type) discharged through a special shaped nozzle, and are designed for use at close range.

These extinguishers are effective on small flammable liquid fires, on surface fires in ordinary combustibles, and they are especially effective on small fires in electrical equipment where a nonconducting extinguishing agent is of importance.

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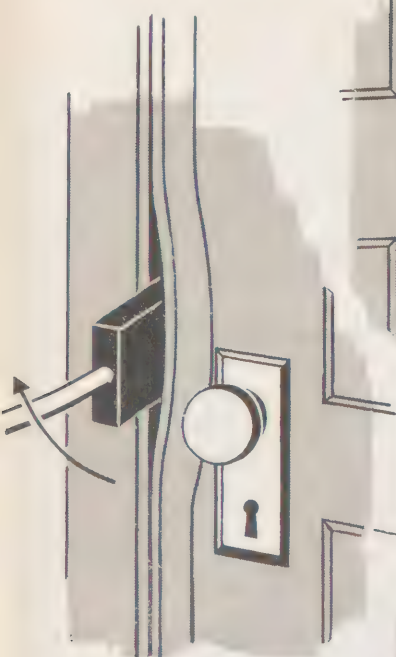
## FORCIBLE ENTRY

OPENING WINDOW WITH  
AXE. INSERT BLADE AND  
PRESS HANDLE DOWN.

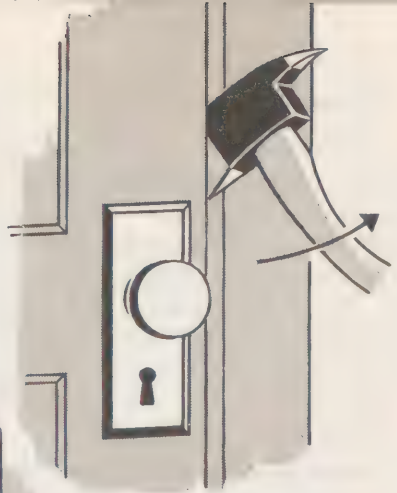


Force is often necessary to get at the base of a fire which may have started in a locked building or in an inaccessible attic or other space. The auxiliary fireman must exercise care that in his zeal to protect property from destruction by fire, he does not destroy more property than the fire.

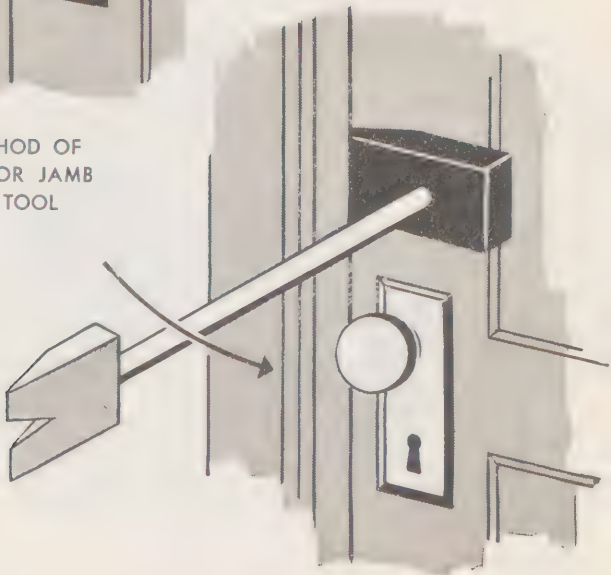
OPENING LOCKED DOOR  
WITH AXE →



PRYING LOOSE DOOR JAMB  
WITH KELLY TOOL



ANOTHER METHOD OF  
LOOSENING DOOR JAMB  
WITH KELLY TOOL



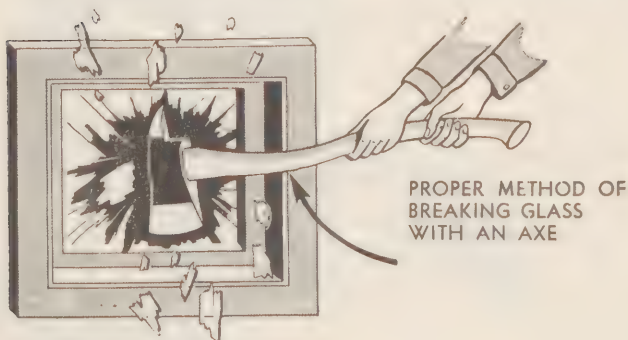


## ***Opening Locked Doors and Windows***

Before forcing an entrance, be sure that doors and windows are not unlocked. If the door has a glass panel, break the glass, and on most doors it is then only necessary to turn the handle on the inside. Determine which way the hinges are fastened so as to know which way to force the door open. If there is no glass panel, a Kelly tool, claw tool, or the edge of an axe may be used to force open the door with little or no damage, depending upon the construction of the door.

In opening windows insert the end of a jimmy or the blade of an axe under the lower edge of the window. This will either loosen or break the lock. If the window swings on pivots at the sides, insert the tool at the top and force the window outward. Another procedure would be to break the pane of glass in order to unfasten the lock or catch.

Prying with a wedge is the principal operation in opening both doors and windows. If the wedge be wide and thin, the entry may be forced with little damage to the building.



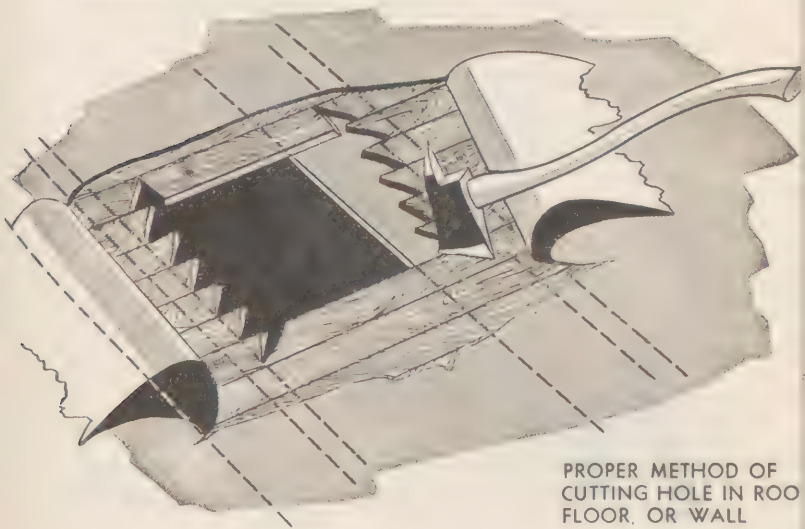
## ***Breaking Glass***

Glass should be broken only to accomplish a definite purpose. If possible stand at one side of and above the glass to be broken so that broken pieces will not follow the handle of the tool used.

By standing to one side any outrush of smoke and gases will also be avoided. Remove all jagged pieces of glass. Minimize damage by breaking least expensive panes.

## ***Cutting Holes Through Roofs, Floors, and Walls***

In opening roof keep wind at back in order to avoid gases and fire coming through the opening. Cutting will be easier if made close to the joists as the boards will not spring. Always keep open the means of escape.

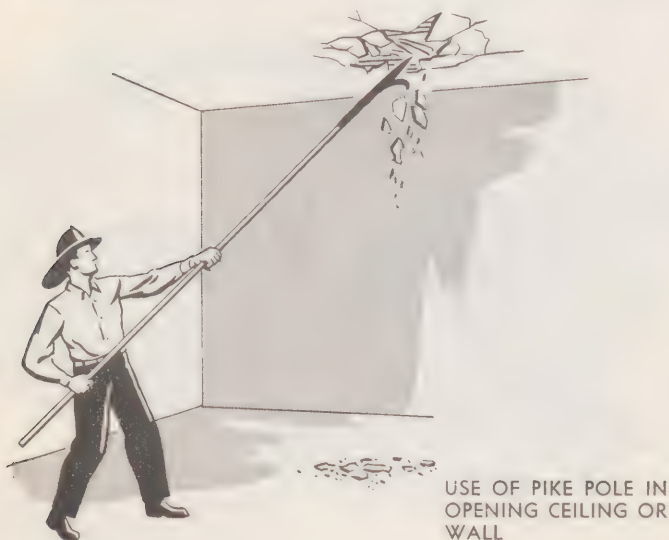


PROPER METHOD OF  
CUTTING HOLE IN ROOF,  
FLOOR, OR WALL

Holes cut in flooring should also be made close to a supporting timber. Before cutting holes, feel along the partitions, walls, or ceilings in order to locate the fire. Be sure that water lines are at hand at time hole is cut.

Be careful of men below when opening a slate or tile covered roof. After a slight opening has been made, the slate or tile may be dropped inside the building.

Use the pick-headed axe for making holes in roofs and floors. The pick or the base of the head will be valuable for prying and digging. Cut close to yourself with short, hard strokes. This will reduce the possibility of striking those around you. Cut wood at an angle of the grain, rather than with the grain. An axe is a useful but very dangerous tool. Be careful.



USE OF PIKE POLE IN  
OPENING CEILING OR  
WALL

## ***Opening Ceilings and Walls***

Use a pike pole to open a plastered ceiling. Stand away as far as possible from the space to be opened. Pull down and away in order to keep falling material at a distance.

When a portion of the plaster is pulled from metal lath there is a possibility that whole sections of the plaster may drop. Be aware of such danger.

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## **VENTILATION**

By ventilation is meant the process of getting rid of hot, combustible gases to permit the firemen to get at the fire.

When a fire has been burning for some time in a tightly closed building, much of the oxygen is used up. Due to the lack of oxygen, the fire may smoulder. A smouldering fire produces highly flammable carbon monoxide and other combustible gases. Any inrush of fresh air from the bottom may result in an explosion and a spreading of the fire.

The explosion can usually be avoided if proper ventilation is practiced by making an opening at the top of the trapped gases. The outrush of the gases prevents fresh air from entering at this point and causing an explosion inside the building.

If the building is filled with smoke and hot gases, start the ventilation operation at the highest point. Work downward floor by floor, opening first the lee then the windward side of the building.

In this way the building can be cleared so that rescue operations can be carried out and so that a close-range attack may be made on the seat of the fire.

Properly carried out, ventilation has the following advantages:

1. Permits search for occupants.
2. Reduces smoke loss.
3. Permits rapid advancement.
4. Reduces the hazards of fire fighting and increases the effectiveness thereof.

### ***Precautions in Ventilating***

Improper or untimely ventilation may increase the fire or create unnecessary damage. Extensive ventilation may not be necessary. When the fire is confined to one room, sufficient ventilation may be secured by opening the top window. If a building is fully charged with smoke, open it at the top. It may not be necessary to cut a hole in the roof. There may be a skylight or some other opening which can be used for ventilation purposes. *Do not stand in front of or above the opening to be made.* The fireman should stand with his back to the wind. When going onto a roof, take a rope along as a means of escape if cut off.

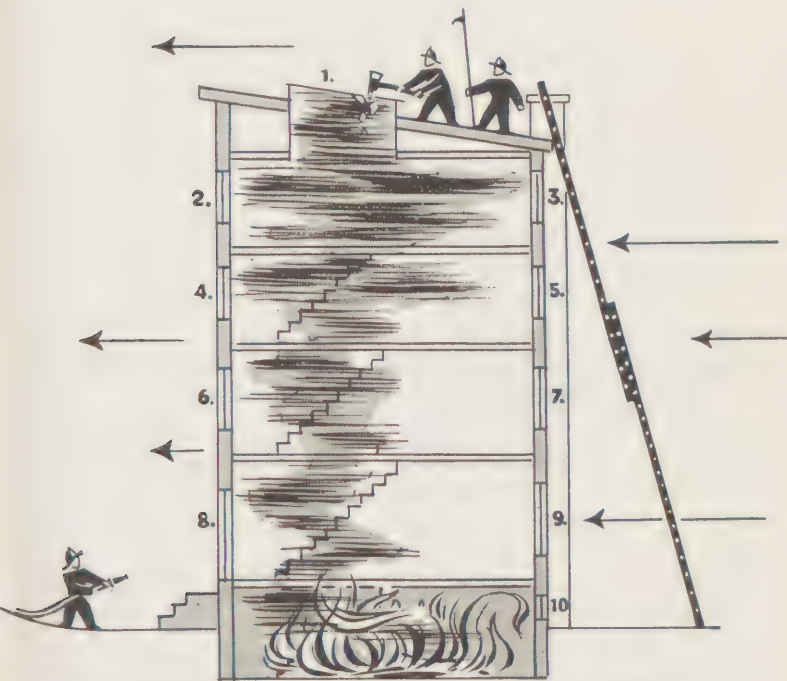
One man should not attempt, by himself, to do the ventilating. If two or more men work together and one man is injured, he can be brought to safety.

### ***Opening Roofs***

Observe exposure hazards which may be created by cutting hole in roof. If hazards exist, have

charged lines in position to cover exposure before opening roof. One large hole, say 4 to 6 feet square, gives better ventilation and is less expensive to repair than several small holes.

After the hole is cut in the roof, it may be necessary to remove the ceiling below by means of a plaster hook or pike pole.



STAND WITH BACK TO WIND WHEN OPENING ROOF



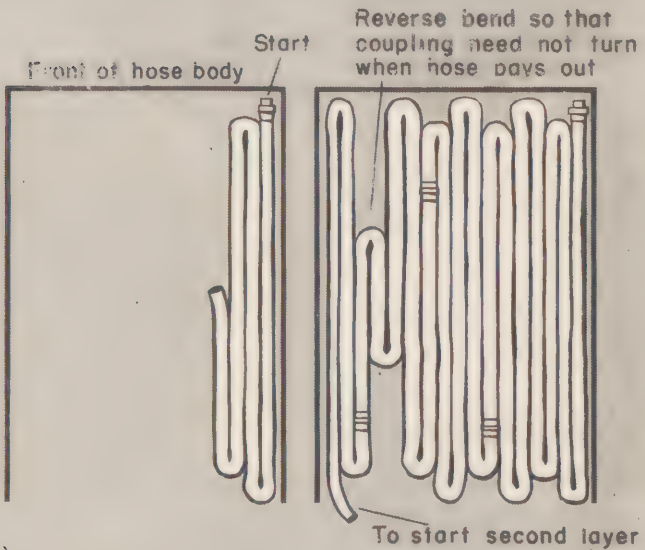
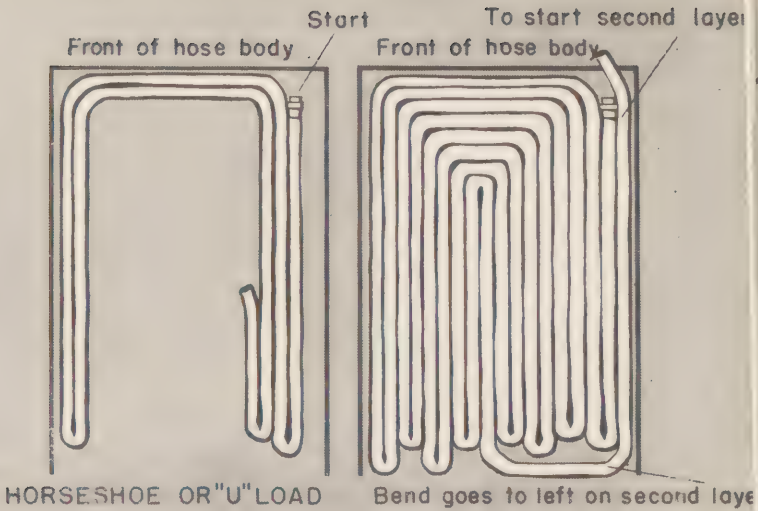
# FIRE HOSE

Fire hose is the elastic connecting link between the water supply and the fire. Nothing is more essential than to have the hose in perfect condition, at all times. If, through neglect and lack of care, the hose fails when it is most needed, an unnecessary loss in property and life may result.

## *Care of Hose*

Exercise caution in order to avoid mechanical injuries to hose such as rips, cracked inner lining, and crushed couplings. The following suggestions apply to cotton rubber-lined hose.

1. Do not permit any vehicles to run over fire hose unless hose bridge is used, or driver has approval of officer in charge.
2. Do not lay hose over or around rough, sharp corners.
3. Shut off nozzle slowly to prevent water hammer and open slowly to prevent sudden back pressures.
4. Avoid striking couplings on pavement or other objects.
5. Protect hose from excessive heat or fire.
6. After hose is used, it should be swept clean and washed. Flush the hose if salt water has been used.
7. Scrub with soap or mild alkaline solution if gasoline or hot oils or chemicals have come in contact with hose.



8. Run water through hose occasionally in order to prolong life.
9. Keep outside of hose dry—inside moist.
10. Do not dry hose in sun or on roadway.
11. Test couplings for jammed threads.
12. Keep threads free from dirt and sand.
13. Hose should be reloaded with different bends every thirty days if not used.

## HOSE LOADS

There are several methods of loading hose, each of which has certain advantages. Local conditions determine the method to use.

The hose bed should be loaded to get the most hose in the space provided and to have a minimum of sharp bends. A basic principle is to so arrange the hose that it will pay out smoothly, speedily, and without kinking. Two common methods are described below.

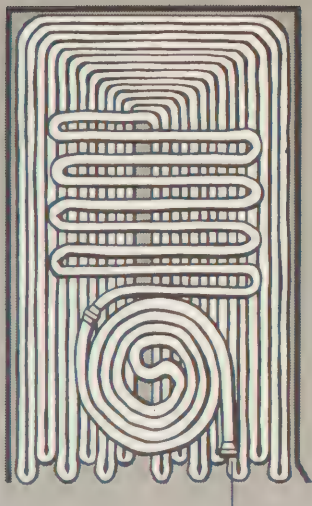
### ***Horse Shoe or "U" Load***

The load is started in the right corner of the bed. The hose is laid around the inside of the bed and alternate rear bends should be made shorter in order to make the bends less sharp. To permit the return of the hose from the center to the outside without protruding behind the bed, make the rear bends on one-half of the bed 3 inches shorter than those of the other half.

### ***The Accordion Load***

The accordion load is quite simple but it has the disadvantage, since all the bends are sharp, of

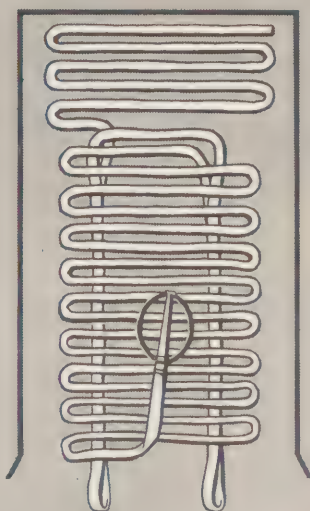
## DOUGHNUT LOAD



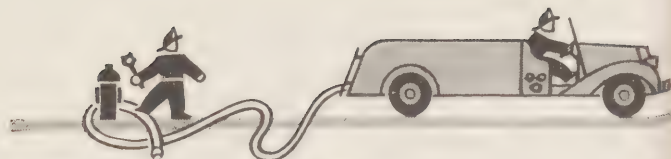
Start of  
doughnut  
roll



Finish of doughnut roll



## SKID LOAD



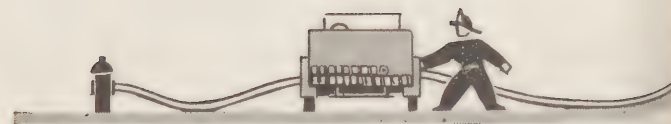
CONNECTING HOSE TO HYDRANT



STRAIGHT LAY



REVERSE LAY



READY TO USE





cramping the rubber lining of the hose. Reverse bends may be made at the coupling so that the coupling need not turn around in order to pay out.

### ***Load Finish***

The speed and efficiency of a hose layout may be increased by the type of load finish. It is best to finish loading the hose in such a manner that a sufficient amount can be dumped quickly to do any operation that may be expected.

For laying from the hydrant to the fire, the doughnut roll assures sufficient hose to the fireman catching the hydrant. The fireman grabs the loose end of the roll, steps off the truck, and the entire roll slides off with him.

The skid load is of advantage when laying from fire to hydrant. To unload, the fireman grasps the loop end of the skid, steps off, and pulls the skid with him. This makes available to the nozzle man a hundred feet or more of hose.

### ***Hose Layout***

Time is at a premium in making hose layouts and advancements. The auxiliary fireman must know the way the apparatus is loaded or serious delay may result. Two hose layouts are possible. The first is the straight lay, or hydrant to the fire, in which the hose generally is loaded with the female end on the finish. The second is the reverse lay or fire to the hydrant in which the male end of the hose is on the finish of the load. *If double male and double female connections are available, no time need be lost regardless of the type of lay.*



At all times, lay hose as straight as possible. Straighten out kinks to eliminate bursting of hose and reduced pressure at the nozzle. Avoid pulling off large supplies of extra hose. Keep hose as close to curbing or edge of road as possible. Make sure couplings are tight and hose washers are in position. If the line must be moved after the water is turned on, lift the hose at the couplings in order to reduce strain and to prevent the coupling lugs from catching on any obstruction.

In making up couplings, tighten by hand only. Use the spanner only to unmake sticking couplings when necessary.

### ***Taking the Hydrant***

Many types of hydrants are in use. Their construction varies considerably. It will be necessary for the auxiliary fireman to study the type or types in the area which he will serve. Learn the principles involved in the construction and operation of the hydrant and practice the operations in connecting hose to the hydrant. Turn on and turn off hydrant slowly.

Keep the hydrant wrench tied to the end of the hose which is to be attached to the hydrant. Where it is customary to lay from the hydrant to the fire with the pumper a gate valve may be attached to the opposite side of the hydrant for a second line. The hose should be snubbed to the hydrant in a manner which permits the fireman to work rapidly and safely.

Do not straddle hose. By using the method illustrated the fireman is less liable to injury if the hose is jerked.

## ***Handling Nozzle***

Do not let go of a nozzle when the line is under high pressure. Better control may be obtained by pressing the nozzle against some solid obstacle.

Open and close nozzle shut-offs slowly.

## ***Hose Advancement***

Whatever the system of advancing hose, teamwork is a major consideration. The following illustrations are suggested as proper methods of advancing hose lines.



OPERATING CHARGED LINE OFF LADDER. OBSERVE HOSE STRAP, LEG LOCK

NOZZLE END  
←



THE SHOULDER LOAD



ADVANCING HOSE UP STAIRWAY

1. Carry hose instead of dragging.
2. Use hose clamp to keep line dry until fire is reached, if pumper is long distance from fire.



ADVANCING HOSE BY HANDLING

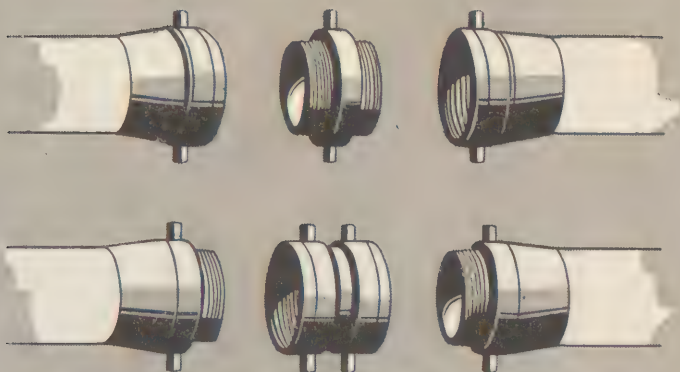
1. Use dry line.
2. Firemen 10 feet apart with 20-25 feet of hose between each man.



ADVANCING HOSE UP LADDER

3. When sufficient hose has reached desired floor, anchor line with hose strap to ladder.

## DOUBLE MALE CONNECTION



## DOUBLE FEMALE CONNECTION



COUPLING HOSE

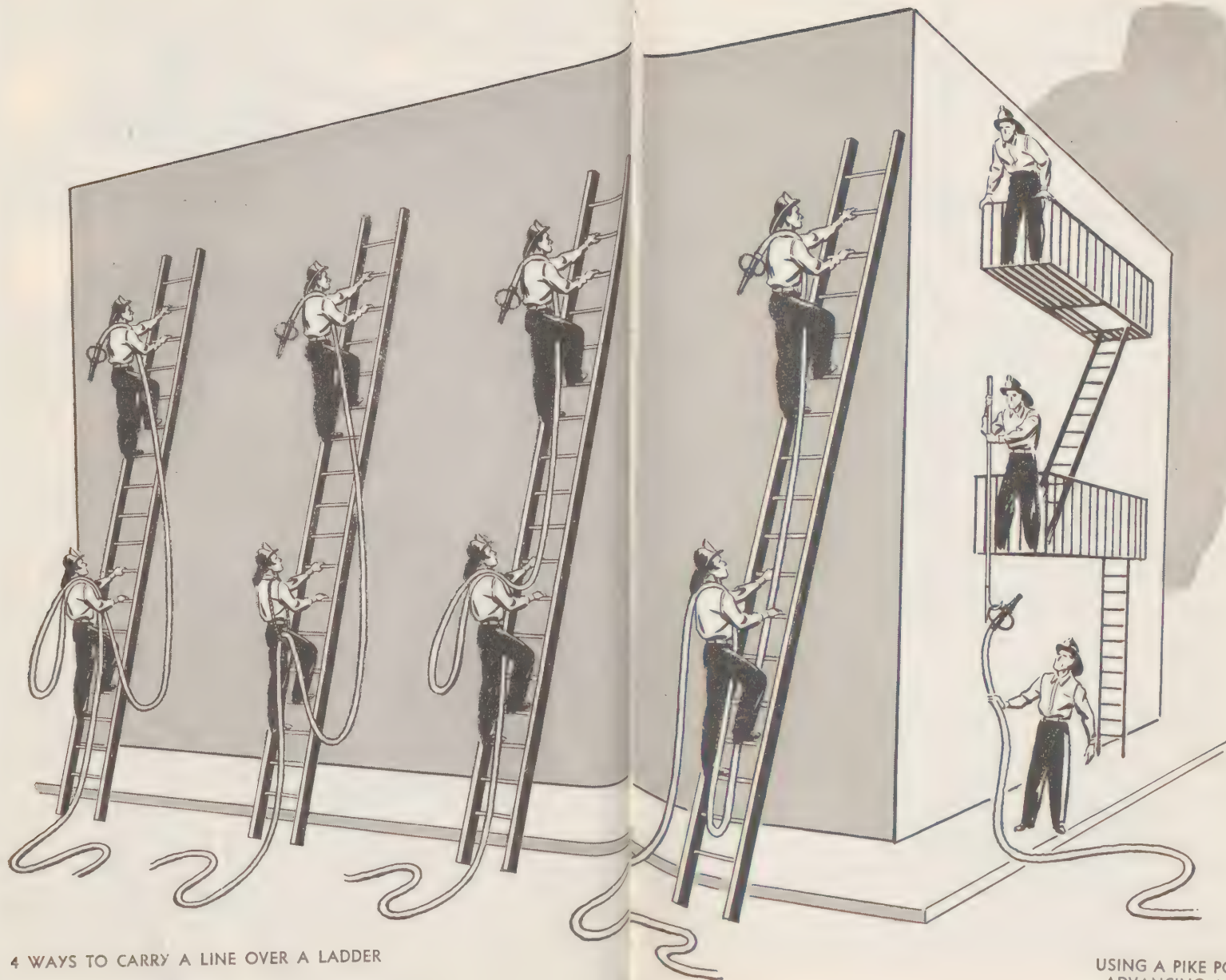


USE OF SPANNER  
WRENCH



TIE FOR  
HOSE LINE  
ON LADDER





4 WAYS TO CARRY A LINE OVER A LADDER

USING A PIKE POLE IN  
ADVANCING A LINE



# LADDER WORK

Every fireman must know how to carry, raise, and climb ladders. Training and practice are necessary to do ladder work rapidly and safely.

## ***Terms Applying to Ladders***

1. Beam—the principal structural member of a ladder in which the rungs are supported.
2. Fly ladder or fly—upper section of extension ladder.
3. Halyard or fly rope—the rope used in hoisting the fly ladder.
4. Heel, foot, or butt—bottom of ladder.
5. Tip—the top of the ladder.
6. Main or bed ladder—lowest section of extension ladder.
7. Round or rung cross members between beams.
8. Tormentors—poles used to raise, guide, and steady long extension ladders.

## ***Types***

Straight ladder.

Extension ladder.

Roof ladder (Hook).

Collapsible attic ladder.

Pompier ladder (Scaling).

Aerial ladder.



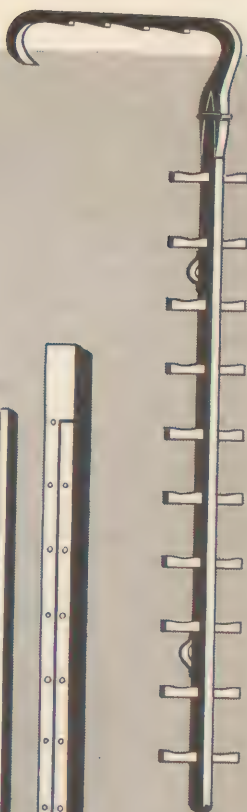
STRAIGHT  
LADDER



ROOF  
LADDER



COLLAPSIBLE  
LADDER



POMPIER  
LADDER  
OR  
SCALING  
LADDER

## Safety

Remember that placing the foot of a ladder too far from a building endangers its stability. Not only is the base of the ladder liable to slide outward but the load which the ladder can carry is considerably less. On the other hand, placing the ladder in a too vertical position is dangerous. It is hard to climb and there is the possibility that it may tip outward. The distance the butt of a ladder should be placed from a building is governed by its length. A recommended practice for ladders is to place the butt away from the building at a distance of approximately  $\frac{1}{5}$  of the length. Only the length of the ladder that is actually used is to be considered.

Take no chances with defective or damaged ladders. Make sure that locks and ropes on extension ladders are in working order and ropes in good condition. Extend ladders to proper working point, and anchor to building, if desirable.



RAISING A LADDER

# RAISING AN EXTENSION LADDER



Fly Ladder

Beam

Round or Rung

Bed Ladder

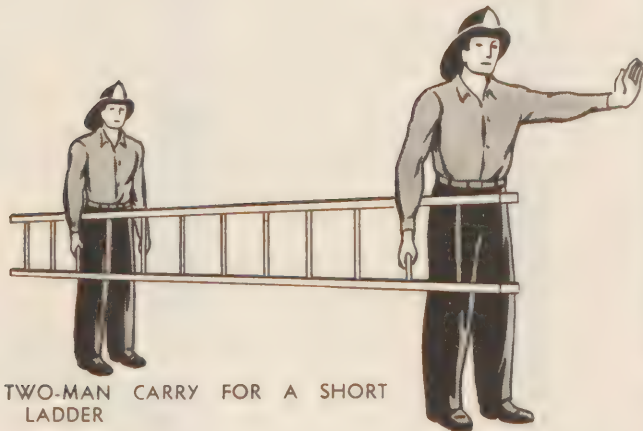
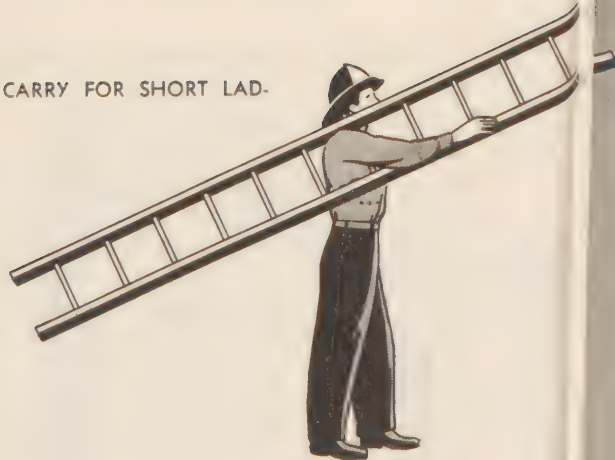
Halyard

Heel, Foot  
or Butt

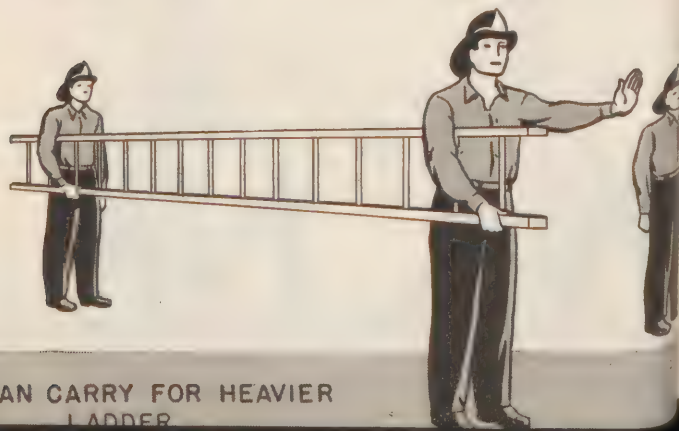
## PIVOTING LADDER



ONE-MAN CARRY FOR SHORT LADDER



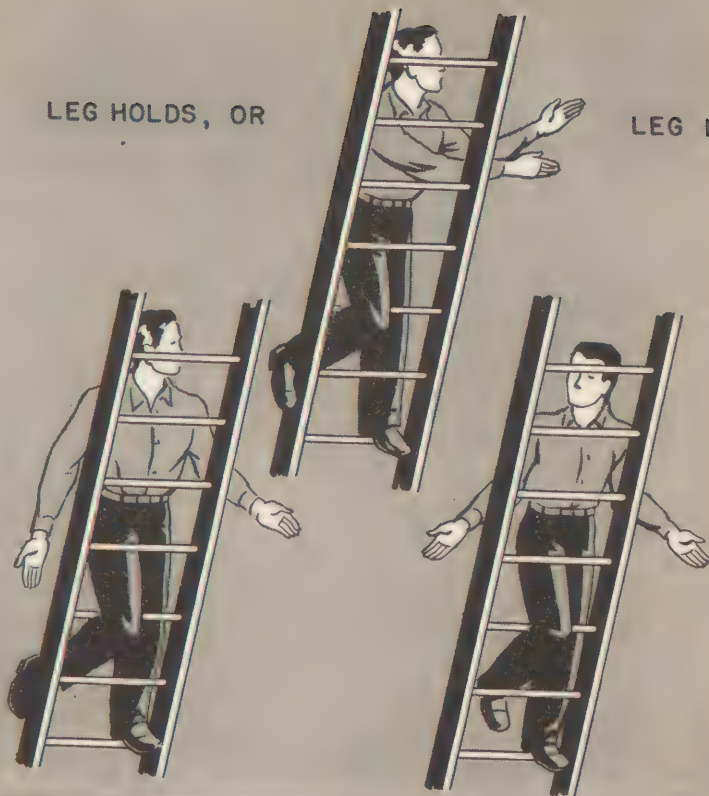
TWO-MAN CARRY FOR A SHORT LADDER



TWO MAN CARRY FOR HEAVIER LADDER

LEG HOLDS, OR

LEG LOCK



HORIZONTAL CARRY FOR LONG HEAVY LADDER

## ***Ladder Raises***

Team work in raising ladders lessens the possibilities of strains and injuries and makes for greater speed and efficiency. Considerable practice is necessary to obtain the "feel" of the ladder and to know how to control its weight properly.

## ***Ladder Carries***

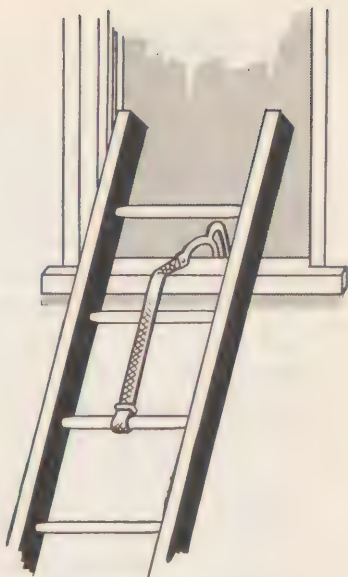
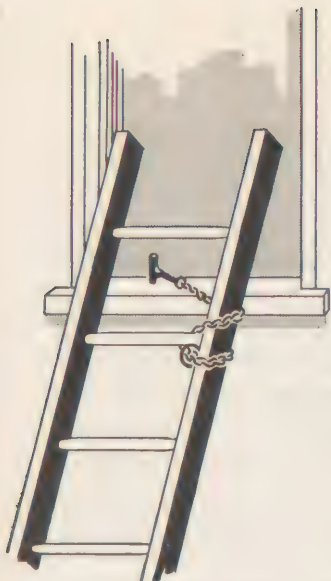
There are a number of different ways to carry ladders. Whatever method is used, practice until you consider yourself able to carry and place a ladder rapidly and with as little effort as possible, and without endangering those about you.

## ***Ladder Climbing***

Rhythm is an important factor in smooth climbing. Climb on the balls of the feet, near the center of the ladder. When carrying an object with one hand slide the free hand along the back of the beam. Stay at arm's length from the ladder. Do not look down.

In working from ladder use leg lock. Pass the foot, *opposite the side you are to work*, over the second rung above the one on which you are standing. Pass foot back through and lock around beam or rung. Place lower foot across rung and against beam of ladder. The rung should be against the heel at the instep.





METHOD OF DOGGING A LADDER

PLACING A ROOF LADDER



# FIRE STREAMS

A major problem is to produce a fire stream that will carry from the closest practicable point of approach to the seat of the fire and at the same time be of such a character as to do the most good.

Different types of fires require different fire streams. It is important for firemen to know the kind of water stream which will be effective on each type of fire in order that a minimum of water damage may result. Following are the types of streams which may be required:

**Solid Stream**—Either large or small, to carry to the base of the fire.

**Spray Stream**—To divide water particles as finely as possible in order to obtain heat absorption. Very effective in fighting confined fires and flammable liquid fires.

A solid fire stream is one which is delivered from a nozzle in such a manner that it travels through

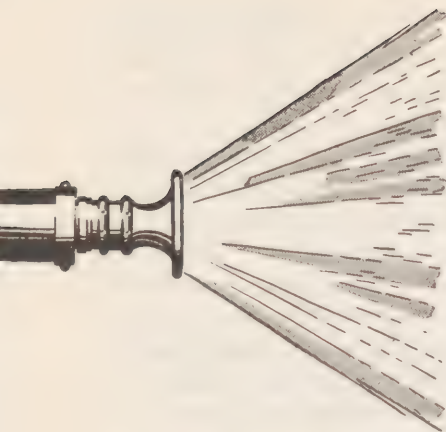
## THE SOLID FIRE STREAM



space as a solid mass. To be most effective, the stream should break at the point which will cover the greatest possible burning area with a sufficient amount of water to put out the fire.

To get that solid stream to the desired point means that the friction loss in the hose line and limitations of gravity and air friction must be overcome. Wind has a tendency to break up streams. *High pressure does not necessarily mean great distance.* Excessive velocity at the nozzle tends to break the stream or, more important, makes the nozzle more difficult to hold.

The *requirements* for a good fire stream, the *characteristics* and *factors* influencing a fire stream, and the methods of obtaining the proper amount of water at a particular spot—all of these are subjects requiring much study. The pump operator, especially, must know how to produce a stream having sufficient capacity and velocity to meet demands. In handling hose streams, practice is necessary.



VAPOR STREAM

## PUMP OPERATION

The chief function of the fire pump is to boost water pressures. Three types of pumps are in common use, the centrifugal, the piston, and the rotary. Since there is some variation in the method of operation of the many makes of pumps, *it will be necessary for the pump operator to undergo specific and detailed training upon the particular pump under his supervision.*

Every auxiliary fireman should be acquainted in some degree with the pumper his company is using. He should know what the pumper can do and what it cannot do under reasonable operating conditions.

## SALVAGE AND OVERHAUL PRACTICES

Protecting property against water damage is known as salvage work. Cleaning up after a fire in order to make the building as habitable as possible or to guard against rekindling of the fire is known as overhauling. Efficient overhauling and salvage work will materially lower the total fire loss.

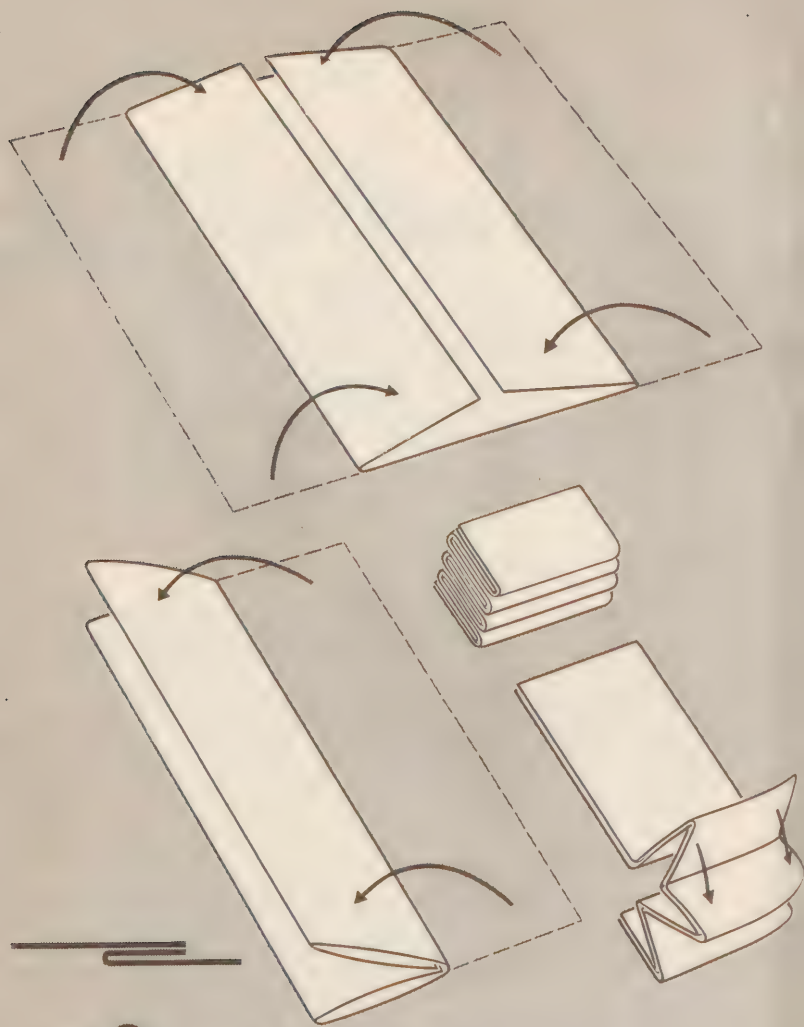
### ***The Salvage Cover***

The salvage cover must be waterproof and of a size that is convenient for handling. 12 by 18 feet or 14 by 18 feet covers are commonly used. The cover should be folded in such a fashion that it can be unfolded quickly. Keep one side as clean as possible, and place that side next to the materials being covered.

### ***Procedure***

Salvage operations offer an excellent opportunity for ingenuity. Any action which prevents or reduces water damage and saves property is worth taking.

The officer or fireman in charge of salvaging must determine where to expect the water to come through. Quick covering at that point is essential.



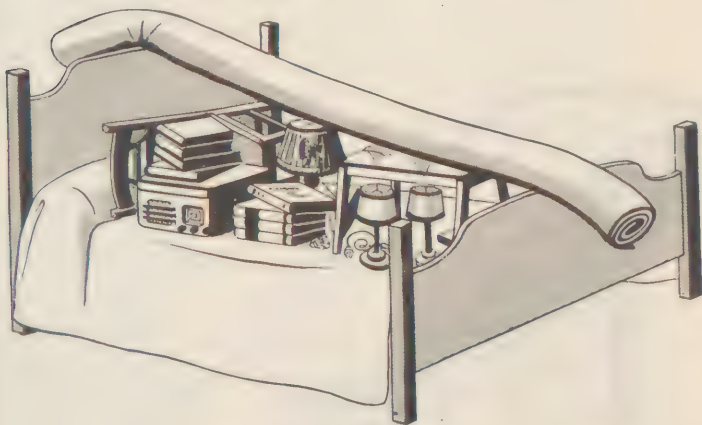
FOLDING OF SALVAGE COVER

Two covers lapped watertight



If it appears that a relatively small amount of water will control the fire, it may be possible to hold the water in the covers by building them up at the ends. If that is impossible, the water should be routed outside by way of elevator shafts, stairways, windows, or other openings. Cut shows how a bedroom may be arranged for covering. The rug is used as a ridgepole over which the cover is placed.

Obviously, one of the best ways of preventing water damage is to get the water out of the building as quickly as possible. Salvage covers may be laid on stairs in such a manner as to carry the water with a minimum of loss. If a building is being heavily deluged, it may be advantageous to bore or cut holes in the floors to relieve the weight of the water.



BEDROOM PREPARED FOR COVERING

## Overhaul

Extinguishing the fires does not complete the fireman's job. Debris and water left in the building will cause further damage. Partially burned articles should be placed in a convenient place for examination by the owner. Plaster, lath, etc., should be carried out of the building. Water on floors should be mopped up. Sawdust sprinkled on a wood floor will help absorb excess moisture.

Cover holes in roofs with tar paper or other material. Close broken windows or holes in floors with boards. See that doors and windows are fastened securely.

Salvage and overhaul practices are infinite in number. The point is, the firemen's duties include whatever action is necessary not only to put out fire, but to reduce property damage as much as possible.

SALVAGE COVER FORMING  
CHUTE ON STAIRWAY



## THE INCENDIARY BOMB

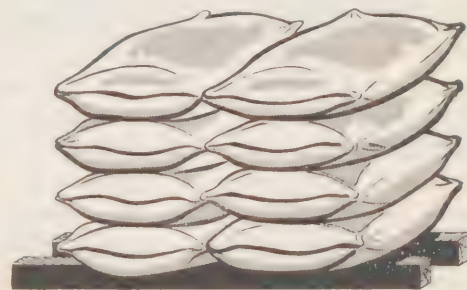
The most commonly used incendiary is one of a magnesium metal alloy. The common unit is a metal cylinder weighing about 2 pounds, 2 inches in diameter and 9 inches long. On some types metal fins on one end of the bomb steady its flight and cause it to strike on its nose.

The bomb burns in two stages. When the bomb lands, the impact fires an igniting mixture which is in the center of the metal cylinder. This mixture is a thermit charge and when it is set off there is the first stage of burning of the igniting mixture itself. This burns with considerable spattering and there is no known means of extinguishing the thermit.

This initial stage is quickly out. It seldom lasts more than a minute. By that time the magnesium metal of the bomb casing has been started burning. In this secondary stage, the bomb burns at a high temperature but there may be little spattering and it is possible to approach the bomb closely.

It is important to know about these two stages of burning in order to know how to deal with it.

SUGAR SACKS  
STORED  
OFF THE FLOOR



## ***Recommended Procedure for Dealing With Incendiary Bombs.***

1. The fire fighter must decide whether to deal first with the fire or the bomb itself. If the fire has gained much headway, it will be necessary to get it under control. A solid stream of water may be used effectively to fight the fire but *the stream should not be directed on the bomb*. An explosion is liable to result which may injure the firefighter and, in addition, disperse the metal causing the fire to spread. Water does not extinguish the bomb but causes it to burn more intensely and it is thus consumed in about one-third the normal time.

In treating an incendiary bomb with water, use a coarse spray where possible. The spray wets the surrounding combustibles, thereby controlling the fire, and does not hazardously accelerate the burning of the magnesium. If the nozzle is not adjustable, break the stream with the thumb or index finger to obtain a spray. Five or six gallons of water are necessary to deal with the bomb alone.

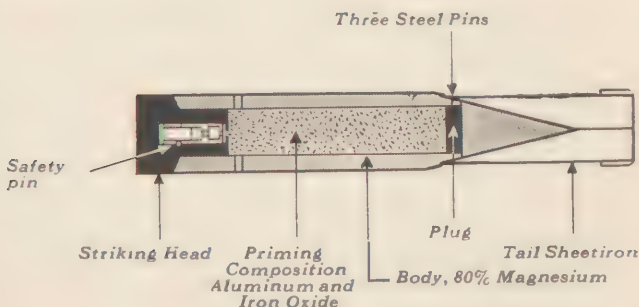
2. Water solution extinguishers may be used up to the limit of their capacity. Three or more 2½-gallon extinguishers will ordinarily be needed to hold in check a fire in ordinary combustibles set by a 2-pound bomb. Carbon tetrachloride, carbon dioxide, and dry chemical types are ineffective on the bomb itself and are dangerous in confined spaces to the extent that they displace oxygen. Carbon dioxide and dry chemical types may be effectively used, when available, to knock down a

fire in surrounding combustibles so the bomb may be approached and shoveled out.

3. Sand or even earth may also be used to fight the incendiary bomb. When placed over the bomb less heat is given off and the glare of the burning metal is eliminated.

Sand does not extinguish the bomb. Unless removed it may quickly burn through the floor. Shovel the bomb into a bucket containing sand, cover the bomb with sand, and carry the bucket at the end of a shovel or pole out of the building.

4. A certain proportion of the 2-pound bombs (about 1 in 50) may have a small explosive charge set to go off about 2 minutes after impact. All of the larger sizes (common ones are 6, 25, and 50 pounds) may be expected to explode. The explosion is of low intensity, but this is a factor to be considered in attacking the bomb. During the first few minutes after the bomb lands, it's a good idea to keep low, behind a door, furniture or other barrier, as you prepare to attack the fire. But keep on your feet so you can duck if an explosion takes place.



INCENDIARY BOMB

***This Page is for Notes***

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# BLACKOUTS

Blackouts are ordered only on the authority of the War Department. A blackout may be ordered during any period when hostile forces are believed to be in the vicinity, whether or not enemy airplanes have been sighted.

**"Blacking Out"** a city means that light sources must be so hidden or dimmed that an enemy bomber will have difficulty in finding the target and lack aiming points such as main street intersections. Following are the general plans used.

**Street Lights.** These are fitted with low-watt bulbs and covers that diffuse the light.

**Automobiles.** Headlights must be covered except for a small pair of slits and hooded.

**Traffic Lights.** Are treated the same way as automobile headlights.

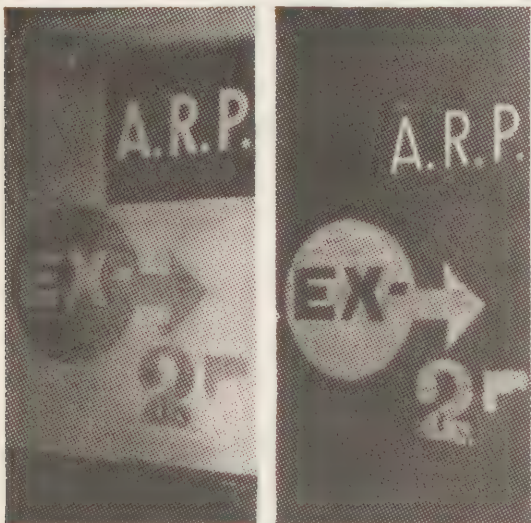
**Buildings.** Windows and doors must be covered with opaque materials. Paint on the glass, heavy curtains, light "baffles" or screens are some of the ways. No cracks of light must show.

**Aids to Seeing.** Since people have to move about during a blackout, the lack of light may be somewhat offset and safety promoted by—



1. Painting curbs, trees, poles and hydrants with white paint. There is a luminous paint, also, that gives off a faint blue light quite visible in total darkness.

2. Painting signs of luminous paint or making them of fluorescent material on which shines ultra-violet or "black" light or installing dimly lighted signs with horizontal screens to diffuse the light.



3. Painting white fenders and stripes around automobiles.

Members of the Citizens' Defense Corps who have outside duties during a blackout can be identified more easily if they wear a white cap or white-painted helmet; also a white belt fitted with crossed straps over the shoulders.



## ***Individual Conduct During a Blackout.***

Observe traffic rules. Keep to the right and remember the man or vehicle approaching *from* your right *has* the right of way.

If you must smoke, go into a hallway or covered place to strike the match. No smoking in the open is an even better rule. Make all crossings at intersections. It is hard for a driver to see you.

Be sure that everyone you know is acquainted with these simple rules.



**DO NOT** run when air raid warnings sound after dark during blackouts.



Use your flashlight as little as possible, if at all. Never point it upward.



Curb edges and direction signs painted white will help you find your way.



Keep pets on leash if you take them out after dark.



If an air raid warning sounds, get under cover, you may be hit by shell fragments.



If you don't know the neighborhood the first policeman or warden will tell you where to go.





When an observer sights a group of hostile planes, he picks up his telephone (1) and says *Army Flash*. The Central Operator (2) at once connects him with the assigned Filter Center (3) to which he reports the type of planes, number, height, and direction of flight. When several reports agree, watchers transmit the data to an Information Center (4) where developments over a large area are plotted on a huge map.

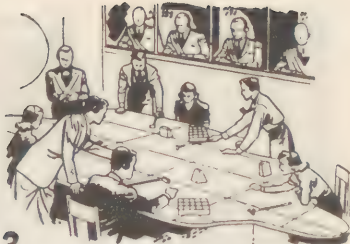
Watching the map, Air Corps officers order interceptor planes into the air, (5) direct them to contact with the enemy; another officer notes the cities threatened and flashes a yellow, blue, or red alarm, according to the degree of danger, to the proper Warning District Center (6).

At this point, Civilian Defense takes over from the Air Corps, telephones the warnings to Control Centers (7) within the Warning District. And here the Commander of the local Citizens' Defense Corps orders the alert, has the public warning sounded usually short blasts on air horns, power horns or steam whistles or on the wailing sirens and if the bombers arrive overhead, directs the operation of passive defense. Learn the air raid warning for your city.

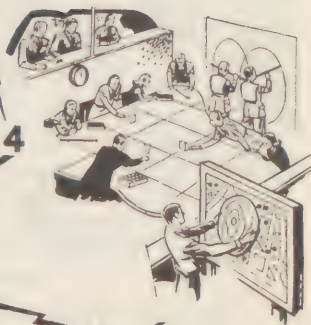
# FLASH



2



3



4



5

6



7





The Refuge Room

## WHAT TO DO IN AN AIR RAID

At the yellow warning, if you are not already on duty, you will be summoned to your post and will carry out orders until relieved. However, here are the rules for those who do not have assigned duties when the air raid warning comes. Memorize them carefully so that you can in turn instruct others. Here is what to tell them:

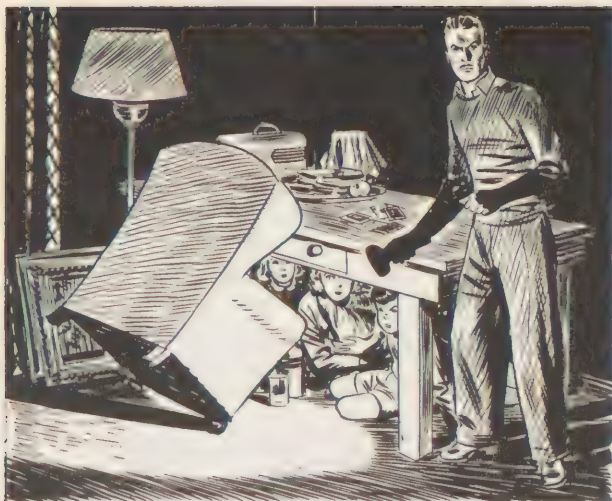
1. If away from home, seek the nearest shelter. Get off the street.

2. If you are driving, first park your car at the curb; be sure all lights are shut off.

3. If you are at home, send the others to the refuge room. This should be a comfortable place with as little window exposure as possible, equipped with drinking water, things to read, toilet facilities, a flashlight, a portable radio, a sturdy table, and food if you like.

4. Turn off all gas stove burners but leave pilot lights, water heaters and furnaces alone. Leave electricity and water on. Fill some large containers or a bathtub with water.

5. Check up on blackout arrangements. Don't let a crack of light show to the outside.



6. See that everyone's eyeglasses and dentures are in the refuge room. There should be additional warm garments for everyone, too.

7. Keep out of line of windows. Fragments and glass splinters cause most casualties.

8. If bombs fall nearby, get under a heavy table, an overturned davenport.

9. Don't rush out when the "all clear" signal sounds. Maintain the blackout. The Raiders may return.

10. Otherwise, keep cool; be sensible and set an example to others.

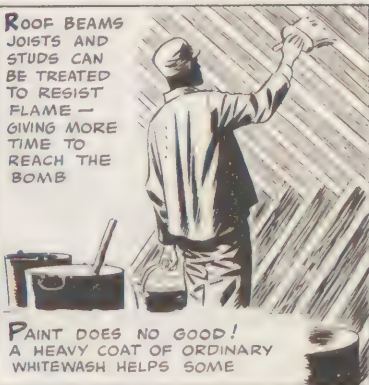
## FIRE DEFENSE

IT WILL BE VERY DIFFICULT TO FIGHT A MAGNESIUM BOMB UNLESS SOME WORK IS DONE BEFORE THE ATTACK



ALL FURNITURE TRUNKS AND JUNK OF ALL KINDS SHOULD BE REMOVED FROM ATTIC OR TOP FLOOR!

ROOF BEAMS JOISTS AND STUDS CAN BE TREATED TO RESIST FLAME — GIVING MORE TIME TO REACH THE BOMB



PAINT DOES NO GOOD! A HEAVY COAT OF ORDINARY WHITEWASH HELPS SOME



# HOW THE MAGNESIUM BOMB WORKS

THE MOST EFFECTIVE  
INCENDIARY BOMB  
MADE SO FAR  
IS THE  
**MAGNESIUM  
BOMB**



LENGTH, ABOUT 14" WEIGHT, 2.2 POUNDS

A LARGE BOMBER  
CAN CARRY 1000  
SUCH BOMBS!



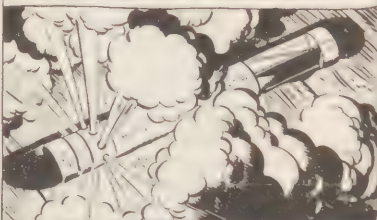
THEY ARE USUALLY RELEASED  
20 TO 50 AT A TIME, SPREAD  
LIKE SHOT BEFORE STRIKING.

DROPPED FROM A HEIGHT OF 20,000  
FEET, THEY DEVELOP ENOUGH FORCE  
TO PENETRATE AN AVERAGE ROOF...



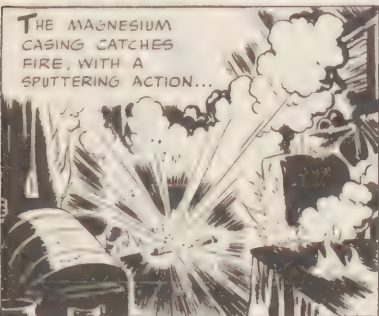
...THUS, THEY USUALLY START BURNING  
IN A TOP STORY OR ATTIC

THE THERMITE FILLING OF  
IRON OXIDE AND FINELY DIVIDED  
ALUMINUM IS THEN IGNITED AND  
DEVELOPS A FIERCE HEAT OF  
**OVER 4500 DEGREES!**



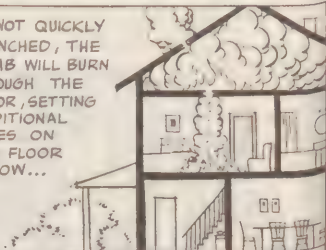
THE FLAME ROARS OUT OF THE  
ESCAPE HOLES.

THE MAGNESIUM  
CASING CATCHES  
FIRE, WITH A  
SPUTTERING ACTION...



...FLAMING MOLTEN METAL IS THROWN  
ABOUT AND SURROUNDING INFLAMMABLE  
MATERIAL CATCHES FIRE

IF NOT QUICKLY  
QUENCHED, THE  
BOMB WILL BURN  
THROUGH THE  
FLOOR, SETTING  
ADDITIONAL  
FIRES ON  
THE FLOOR  
BELOW...



BUT, WITH PROMPT  
ACTION AND SIMPLE  
TOOLS, A MAGNESIUM  
BOMB CAN BE QUENCHED!

# CONTROLLING WITH WATER

TO FIGHT A BOMB WITH WATER, YOU NEED TWO MEN AND SPECIAL EQUIPMENT. REMEMBER, YOU CAN'T PUT OUT THE BOMB — YOU FEED IT WATER, TO BURN OUT!

ONE MAN PUMPS 80 STRO ES A MINUTE TO KEEP A STRONG E OUGH PRESSURE TO THROW A JET 3 FEET, AS SPRAY, 15 FEET. ( E MAN FIGHTS THE FIRE .

YOU USE UP A BUCKET IN 1½ MINUTES

SPECIAL DOUBLE ACTION PUMP WITH 30 FEET OF HOSE AND SPECIAL NOZZLE NEEDED.



SPRAY ON BOMB

A THIRD PERSON IS MOST USEFUL TO CHECK OTHER POINTS FOR FLAME REPLENISH WATER AND RELIEVE PUMPER.

AMPLE STORAGE OF WATER SHOULD BE PROVIDED IN ADVANCE, AS WATER MAINS MAY BE BROKEN BY HIGH EXPLOSIVES AND PRESSURE LOST! FILL THE TUB, EXTRA PAILS AND DON'T FORGET IN A PINCH —

THE CONTENTS OF HOT WATER OR HEATING BOILERS!

NEVER THROW THE CONTENTS OF A WATER PAIL ON A BOMB!

IF CONTROL OF THE BOMB SEEMS DOUBTFUL, HAVE AN ALARM TURNED IN, BUT CONTINUE FIGHTING THE BOMB UNTIL HELP ARRIVES OR SUPPLIES ARE EXHAUSTED!

1 LEARN NOW HOW TO CALL

2 LEARN NOW LOCATION OF NEAREST ALARM...

...IT WILL SCATTER WITH EXPLOSIVE VIOLENCE!

MILTON CANIFF



# CONTROLLING WITH SAND

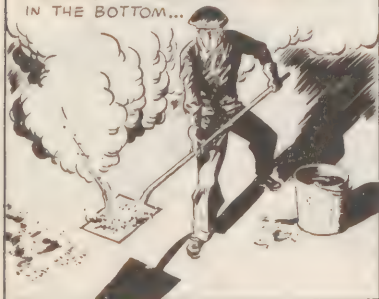
APPROACH THE BOMB IN A CROUCHING OR CRAWLING POSITION. PLACE THE SAND BUCKET, UPSET, TO ALLOW A FULL-ARM SWING TOWARD THE BOMB



TRY TO COVER THE BOMB WITH DRY SAND TO CONFINE IT'S ACTION, SO THAT YOU CAN GET NEAR ENOUGH TO SCOOP IT UP ON THE SHOVEL



WHEN THE BOMB IS UNDER FAIR CONTROL, SCOOP IT UP ON THE SHOVEL, FIRST RIGHTING THE BUCKET, BUT LEAVING SOME SAND IN THE BOTTOM...



...IF THE BOMB CAN BE DROPPED FROM A WINDOW TO SOME PLACE IT CAN BURN OUT HARM —

GET RID OF IT THAT WAY!



... OTHERWISE, PUT IT IN THE BUCKET ON TOP OF SAND, COVER IT WITH MORE SAND ...



... THEN, HOLDING THE BUCKET ON THE SHOVEL, CARRY IT OUT OF THE HOUSE ...





## ABOUT FIRE EXTINGUISHERS

Many houses and public buildings have fire extinguishers. They will be as useful as ever in putting out fires caused by an incendiary bomb. For putting out the bomb itself, the extinguisher may not be suitable.

Read the label. If it says that the contents include **CARBON TETRACHLORIDE**, it cannot under any circumstances be used on a magnesium bomb. It is not only ineffective, it may cause dangerous gas to be generated. After the bomb is burnt out, use it on any remaining fire.

All water-type extinguishers are suitable. If the label says **SODA-ACID**, that's simply a means of creating pressure in the extinguisher. Turn it upside down, use it. You can get a spray effect by putting the thumb over the nozzle, use the jet on surrounding fires. However, *one extinguisher is not enough to burn out a magnesium bomb*. And you cannot refill the extinguisher.

It is best to have sand or pump-bucket equipment handy, use them on the bomb, and save the extinguishers for resulting fires.

A foam extinguisher will also help to control a bomb, but one extinguisher load will not finish the job.

See that the extinguishers you know about are ready for use.

# CHEMICAL WARFARE AGENTS

## REFERENCE AND TRAINING CHART

HOSPITAL CASE	FIRST AID STATION	LUNG PROTECTION NEEDED	COMPLETE PROTECTION NEEDED

LEGEND

The importance of proper first aid for gas victims cannot be overemphasized. The following are general rules which apply in all cases:

A. Act promptly and quietly; be calm.

B. Put a gas mask on the patient if gas is still present or if he has a mask on, check to see that his is properly adjusted. If a mask is not available, wet a handkerchief or other cloth and have him breathe through it.

C. Keep the patient at absolute rest; loosen clothing to facilitate breathing.

D. Remove the patient to a gas-free place as soon as possible.

E. Summon medical aid promptly; if possible, send the victim to a hospital.

F. Do not permit the patient to smoke, as this causes coughing and, hence, exertion.

CLASS	NAMES AND SYMBOLS	FORM	ODOR	PERSISTENCE	TACTICAL CLASS	PROTECTION	FIRST AID (After removal from gassed area)	PHYSIOLOGICAL EFFECT
VESICANTS	MUSTARD <small>BIS(2-CHLOROETHYL) SULFIDE</small> <chem>S(CH2CH2)2Cl2</chem>	LIQUID AND VAPOR	Sweet, Mustard-like Mustard-like	One day to one week Longer if dry or cold			Undress; remove liquid mustard with protective ointment; bleach soles, or kerosene bath; wash eyes and nose with soda solution.	Delayed effect. Burns skin or membrane. Inflammation respiratory tract leading to pneumonia. Eye irritation, conjunctivitis.
	LEWISITE <small>DITHIOARSENIC ACID</small> <chem>CHClCH2AsCl2</chem>	LIQUID AND VAPOR	Mustard-like Mustard-like	One day to one week Longer if dry or cold			Undress; remove liquid Lewisite with hydrogen peroxide; lie in glucose or kerosene bath; wash eyes and nose with soda. Rest—Doctor.	Burning or irritation of eyes, nasal passages, respiratory tract, skin. Asenseless poison.
LUNG IRRITANTS	CHLORPICRIN <small>2,4-DICHLOROPICRIN</small> <chem>ClCH2NO2</chem>	GAS	1-2000 ft. air	Open 6 hours Woods 12 hours			Wash eyes; keep quiet and warm. Do not eat or drink.	Causes severe coughing, crying, vomiting.
	DIPHOSGENE <small>TETRACHLOROETHYLENE DICARBONATE</small> <chem>ClCOCOCls</chem>	GAS	1-2000 ft. air	30 minutes			Keep quiet and warm. Give coffee as a stimulant.	Causes coughing, breathing hurts, eyes water, faint.
LACRIMATORS	PHOSGENE <small>CARBONYL CHLORIDE</small> <chem>COCl2</chem>	GAS	1-2000 ft. air	10 ... minutes			Keep quiet and warm. Bed rest. Coffee as a stimulant. Loosen clothing. No alcohol or cigarettes.	Irritation of lungs, occasional vomiting, tears in eyes, doped feeling. Occasional symptoms delayed. Later collapse, heart failure.
	CLORACETOPHENONE <chem>C6H5CH2COCH3</chem>	GAS	1-2000 ft. air	10 minutes			Wash eyes with cold water or boric acid solution. Do not bandage face wound. For skin sodium sulphate solution.	Makes eyes smart. Shut tightly. Tears flow. Temporary.
STERMUTATORS	BROMBENZYL CYANIDE <chem>C6H5CH2CN</chem>	GAS	1-2000 ft. air	Several days (Weeks in water)			Wash eyes with boric acid. Do not bandage.	Eyes smart, shut, tears flow. Effect lasts some time. Headache.
	ADAMSITE <small>DIPHENYL ARSINE</small> <chem>(C6H5)2AsCl</chem>	GAS	1-2000 ft. air	10 minutes			Keep quiet and warm. Loosen clothing. Reassure. Spray nose with 1% glycerine or spirit bleaching powder. Aspirin for headache.	Causes sneezing, sick, depressed feeling, headache.
	DIPHENYL CHLORARSINE <chem>(C6H5)2AsCl</chem>	SMOKE	1-2000 ft. air	Summer 10 minutes			Remove to pure air; keep quiet. Then bleach in powder bottle.	Causes sick feeling and headache.

# WAR GASES

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## *General Notes.*

War "Gases," or chemical agents used to produce casualties, are surprise weapons. As this is written, they have not been used against the British or others trained to protect themselves. They have been used against the Ethiopians and the Chinese.

A gas-tight room suitably located offers fair protection against any probable concentration of war gas in a city. For those whose duties take them into the streets a gas mask offers full protection against all but the "blister gases" (liquid vesicants). To enter areas where mustard or lewisite is present, full protective clothing is needed.

War gases may be dropped in bombs or simple containers and liquid vesicants may also be sprayed by airplanes.

The gas warning is a "percussion sound"—that is, bells, drums, hand rattles, rapidly struck resonant objects of any kind. If the presence of gas is suspected, report to the nearest warden. Do not shout if distant gas alarms are heard. The danger is local and the spreading of an alarm must be left to the wardens.

The notes on the following pages are simply for reference for those who have received instruction in protection against gas. Reading them will not by itself make you an expert in gas defense.

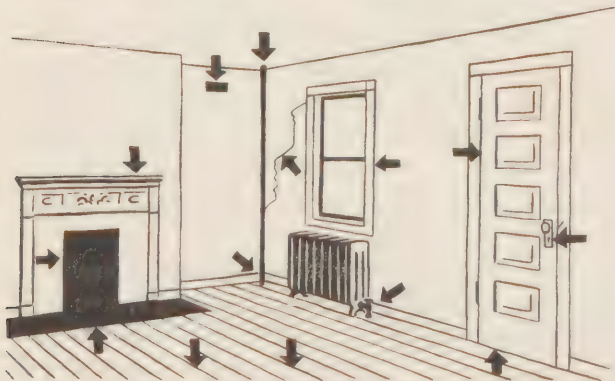
# THE GAS-TIGHT ROOM

War gases hug the ground, flow into cellars and basements. Upper floors of a dwelling are away from dangerous concentrations. If all openings and cracks are closed, a room three stories from the ground will offer good protection against war gases.

To stop cracks and small openings, tape of various kinds may be used. A mush made by soaking newspapers in water or patching plaster may be used for caulking larger openings. A piece of wall board, nails and caulking material may be kept handy to cover a window broken by the blast of high explosives.

One door may be used as an entrance by fastening over it a blanket in such a way as to seal it tightly when no one is going in or out. If soaked in oil to close the air spaces, the blanket is more effective.

Store necessary supplies in such a room—food, water, chairs, a battery-operated radio, flashlight and by all means provide some sort of toilet facilities use it as the refuge room.





Allow 20 square feet of floor space for each person who is to occupy an average room with a ceiling nine feet high. This will give enough air to occupy the room 10 hours.

The illustration shows where to stop up cracks, how to hang the blanket at the entrance door.

## ***“Blister Gases” and Decontamination.***

Lewisite and mustard “gas” are liquids in the normal state. They give off a dangerous vapor that acts as a war gas and unless chemically neutralized may persist for a week, contaminating the air for a considerable distance down wind.

Full protection against these chemical agents is afforded by gas-proof clothing, covering the wearer from top to toe and tightened at wrists and ankles. The greatest care must be used in undressing after exposure to lewisite or mustard and this is done at personnel decontamination stations, where vesicant casualties are also taken for first aid.

Decontamination of streets, walls, and buildings is effected principally by means of chloride of lime (bleaching powder) freshly mixed with earth and water as a slurry or paste. It must be thoroughly worked into cracks and crevices and the resulting product flushed away. This work is done by the decontamination squads.

The liquid vesicants are very penetrating and ordinary shoes or clothing offer no protection. Do not go into the streets after a gas alarm has been sounded except on direction of the Warden.



RANK DESIGNATION	▲	▲ ▲	▲ ▲ ▲	▲	△	△ △	△ △ △	★	★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★ ★ ★
AIR RAID WARDEN	FIRST CLASS	SENIOR OR SECTOR WARDEN	ZONE LEADER	GROUP LEADER	CHIEF WARDEN	STATE WARDEN	STATE WARDEN	NO OTHER RANKS				
AUXILIARY FIREMEN	"	SQUAD LEADER	PLATOON LEADER	COMPANY LEADER	FIRE CHIEF	STATE FIRE COORDINATOR	STATE FIRE COORDINATOR	NO OTHER RANKS				
AUXILIARY POLICEMEN	"	"	"	"	CHIEF OF POLICE	NO OTHER RANKS	NO OTHER RANKS					
BOMB SQUADS	"	"	NONE	"	"	NO OTHER RANKS	NO OTHER RANKS					
RESCUE SQUADS	"	"	DEPOT LEADER	"	FIRE CHIEF	NO OTHER RANKS	NO OTHER RANKS					
MEDICAL FIELD UNITS	"	TEAM LEADER	SQUAD LEADER	UNIT LEADER	CHIEF OF E. M. S.	STATE MEDICAL DIRECTOR	STATE MEDICAL DIRECTOR	NO OTHER RANKS				
MEDICAL AUXILIARIES (stretcher teams)	"	" *	"	NO OTHER RANKS								
NURSES' AIDES												
EMERGENCY FOOD AND HOUSING	FIRST CLASS	UNIT LEADER	DEPOT LEADER	COMPANY LEADER	CHIEF WARDEN	NO OTHER RANKS	NO OTHER RANKS					
DRIVERS UNITS	"	CONVOY LEADER	"	"	NO OTHER RANKS							
MESSENGERS	"	SENIOR MESSENGER	PLATOON LEADER	"	NO OTHER RANKS							
ROAD REPAIR CREWS	"	CREW LEADER	DEPOT LEADER	"								
DEMOLITION AND CLEAR.	"	"	"	"	CHIEF OF EMER. WORK S.	NO OTHER RANKS	NO OTHER RANKS					
DECONTAMINATION SQUADS	"	SQUAD LEADER	STATION LEADER	"								
FIRE WATCHERS	"	NO OTHER RANKS										
REPAIR CREWS	"	CREW LEADER	SERVICE LEADER	NONE	CHIEF OF UTILITIES	NO OTHER RANKS	NO OTHER RANKS					
LOCAL STAFF	"	AS REQUIRED		STAFF UNIT LEADER	CONTROLLER	COMMANDER	COORDINATOR	NO OTHER RANKS				
STATE STAFF	"	AS REQUIRED			AS DESIGNATED	AS DESIGNATED	COORDINATOR	COORDINATOR	NO OTHER RANKS			
U. S. STAFF	"	AS REQUIRED				AS DESIGNATED	AS DESIGNATED	AS DESIGNATED	REGION DIRECTOR PRINCIPAL ASSO'S	U. S. DIRECTOR		
EQUIVALENT ARMY TERM	SVT 1st CLASS	NON-COMM OFF	LIEUTENANT	CAPTAIN	MAJOR	COLONEL	BRIG GEN	MAJ GEN	LIEUT GEN	GENERAL		

# CITIZENS' DEFENSE CORPS

The team of trained civilian services organized to operate the passive defense is known as the Citizens' Defense Corps. It includes regular forces of the city—police, firemen, welfare workers, sanitation men—as well as volunteers. It operates as a unit under the local Defense Coordinator.

## *Staff.*

The Citizens' Defense Corps is headed by a Commander assisted by a staff. His second in command is the Executive Officer. There are others who operate the control center and the communications, account for personnel and property and assign transportation. The Chiefs of the Fire and Police Departments assist him in the passive defense. There is a Chief Air Raid Warden, a Chief of Emergency Medical Services, and others who control groups of the enrolled volunteers. Learn the organization of the Citizens' Defense Corps in your community.

## ***Enrolled Volunteer Services of The Citizens' Defense Corps.***



Air Raid Wardens are in complete charge of a sector containing the homes of about 500 people. To them the warden is the embodiment of all Civilian Defense.



Auxiliary Firemen assist the regular fire-fighting forces.



Auxiliary Policemen assist the police department in enforcing blackout restrictions, in traffic control, and in guard duties.



Bomb Squads are specially trained squads of police to handle and dispose of time bombs and duds.



Rescue Squads are trained crews of about 10 men each with special equipment to rescue the injured from debris.



Medical Forces consist of first-aid parties and stretcher squads and personnel at casualty clearing stations. Members of these forces are doctors, trained nurses, and assistants.



Nurses' Aides assist nurses. They have special Red Cross Training.



Emergency Food and Housing Corps members provide welfare services to the needy and homeless.



Drivers Units consist of emergency drivers of vehicles used by the Civilian Defense services.



Messengers carry supplies, dispatches, and messages wherever needed.



Road Repair Crews restore normal flow of traffic as quickly as possible. Utility repair men work with these crews and with demolition squads.



Demolition and Clearance Crews remove rubble, fill bomb craters, and remove unsafe walls or parts of buildings.



Decontamination squad members are specially trained to treat clothing and equipment as well as streets and walls contaminated by war gas.



Fire Watchers must spot and combat incendiary bombs.

# A MANUAL OF DRILL

for the

## CITIZENS' DEFENSE CORPS

*Adapted from the Basic Field Manual of the  
United States Army*

Basic drill is required of a volunteer for award of the insigne. Drill for units of the Citizens' Defense Corps, moreover, is recommended as it helps to coordinate the work of individuals under a single command. The purposes of drill are:

**1** To enable a leader to move his unit from one place to another in an orderly manner.

**2** To aid in disciplinary training by instilling habits of precision and response to the leader's orders.

**3** To provide a means, through ceremonies, of enhancing the morale; develop a spirit of cohesion; and give an interesting spectacle to the public.

**4** To give leaders practical training in commanding volunteers.

*Drills should be frequent, intensive, and of short duration.*

## ***General.***

A normal squad of volunteers contains 12 men or 12 women, all of one service. It consists of a leader, an assistant leader, and other personnel. As far as practicable, the squad is kept intact. The usual formation of the squad is a single rank or single file. This permits variations in the number of men composing the squad.

## ***To Form the Squad.***

The command is; **FALL IN.** At the command **FALL IN** the squad forms in line as shown. Squad leader on the squad's extreme right, assistant leader on the squad's extreme left.

To secure uniformity, the tallest leader is put in charge of the first squad, the second tallest in charge of the second squad, etc. Assistant

**Fig. 1—A Squad in Line**

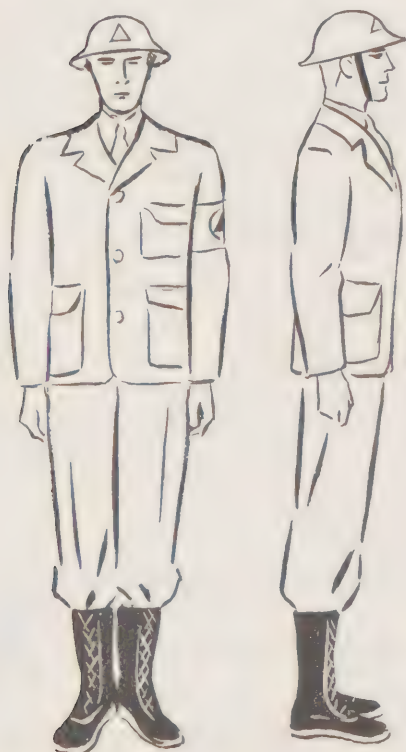


leaders are similarly arranged. Other volunteers are placed according to height beginning with the tallest being placed next to the leader.

On falling in, each man except the one on the left extends his left arm laterally at shoulder height, palm of the hand down, fingers extended and

joined. Each man, except the one on the right, turns his head and eyes to the right and places himself in line so that his right shoulder touches lightly the tips of the fingers of the man on his right. As soon as proper intervals have been obtained, each man comes to attention, drops his arm smartly to his side and turns his head to

Fig. II—A Volunteer at Attention





the front, heels are together, feet forming a right angle; knees are straight without stiffness, hips level and drawn back slightly, body erect and resting equally on hips, chest lifted and arched, shoulders square and falling equally. Arms hang straight down without stiffness with the back of the hands out, fingers held naturally. Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical, eyes straight to the front. The weight of the body rests equally on the heels and the balls of the feet. In assuming the position of attention the heels are brought together smartly and audibly.

(Leaders and assistant leaders will be appointed under authority defined by the Chief of the Service of which the squad forms a part.

### ***To Form at Close Intervals.***

The commands are: At Close Interval, **FALL IN**. At the command **FALL IN**, the volunteers fall in as described above, except that close intervals are obtained by placing the left hands on the hips. In this position the heel of the palm of the hand rests on the hip, the fingers and thumb are extended and joined, and the elbow is in the plane of the body.



**Fig. III—A Volunteer Falling in at Close Interval**

## ***To Aline the Squad.***

If in line, the commands are: Dress Right, DRESS, Ready, Front. At the command DRESS, each man except the one on the left extends his left arm (or if at close interval, places his left hand upon his hip), and all aline themselves to the right. The instructor places himself on the right flank one pace from and in prolongation of the line and facing down the line. From this position he verifies the alinement of the men, ordering individual men to move forward or back as is necessary. Having checked the alinement, he faces to the right in marching and moves three paces forward, halts, faces to the left and commands: Ready, FRONT. At the command FRONT, arms are dropped quietly and smartly to the sides and heads turned to the front.

## ***Rests.***

Being at a halt the commands are: FALL OUT, REST, AT EASE, and PARADE REST.

At the command FALL OUT, volunteers leave the ranks but are required to remain in the immediate vicinity.

At the command REST, one foot is kept in place. Silence and immobility are not required.

At the command AT EASE the right foot is

kept in place. Silence but not immobility is required.

At the command of execution **REST** of Parade **REST**, move the left foot smartly 12 inches to the left of the right foot keeping the legs straight so that the weight of the body rests equally on both feet. At the same time, clasp the hands behind the back, palms to the rear, thumb and fingers of the right hand clasping the left thumb without constraint; preserving silence and immobility.

Being at any of the rests except **FALL OUT**, to resume the position of Attention, the commands are Squad (or other unit being commanded) **ATTENTION**. At the command **ATTENTION** take that position in your squad.

### ***Eyes right (left).***

The commands are: Eyes (Preliminary Command), **RIGHT** (Command of Execution) (**LEFT**) Ready **FRONT!** At the command **RIGHT**, each man turns his head and eyes to the right. At the command **FRONT** the head and eyes are turned to the front.

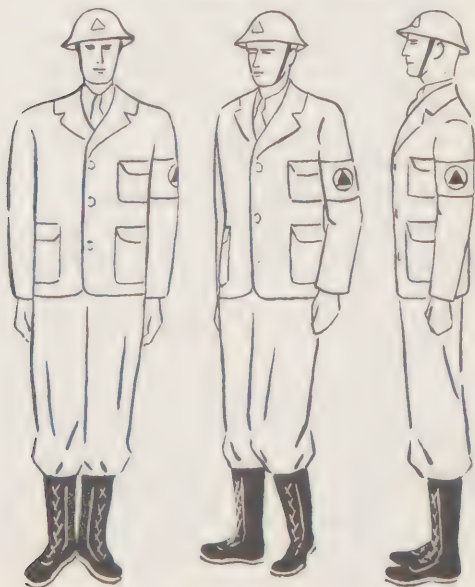
## **Facings.**

*(All Facings are executed at the halt.)*

*To the flank.*—The commands are Right (Left) FACE. At the command FACE, slightly raise the left heel and the right toe: Face to the right, turning on the right heel, assisted by a slight pressure on the ball of the left foot. Next, place the left foot beside the right. Exercise Left FACE on the left heel in a corresponding manner.

*To the rear.*—The commands are: About FACE. At the command FACE, carry the toe of the right foot a half-foot length to the rear and slightly to the left of the left heel without changing

**Fig. IV—Executing Right FACE**



the position of the left foot; weight of the body mainly on the heel of the left foot; right leg straight without stiffness. (TWO) Face to the rear turning to the right on the left heel and on the ball of the right foot, place the right heel beside the left.

### ***Steps and Marchings.***

All steps and marchings executed from the halt, except right step, begin with the left foot

**Quick Time:** Being at a halt, to march forward in quick time, the commands are: Forward **MARCH**. At the command Forward, shift the weight of the body to the right leg without perceptible movement. At the command **MARCH**, step off smartly with the left foot and continue the march with steps taken straight forward without stiffness or exaggeration of movements. Swing the arms easily in their natural arcs, 6 inches to the front and 3 inches to the rear of the body. To halt when marching in quick time, the commands are: Squad **HALT**. At the command **HALT**, given as either foot strikes the ground, execute the halt in two counts by advancing and planting the other foot and then bringing up the foot in rear.

To Mark Time the commands are: Mark-Time, **MARCH**.

Being in march at the command **MARCH**, given as either foot strikes the ground, advance and plant the other foot, bring up the foot in rear, placing it so that both heels are on line and continue the cadence by alternately raising and planting each foot. The feet are raised 2 inches from the ground.

Being at a halt, at the command **MARCH** raise and plant first the left then the right as prescribed above.

The halt is executed from mark time as from quick time.

*Half Step.*—The commands are: **Half Step MARCH**. At the command **MARCH**, take steps of 15 inches in quick time. To resume the full step from the half step or mark time the commands are: **Forward MARCH**.

*Side Step.*—Being at a halt the commands are: **Right (Left) Step MARCH**. At the command **MARCH**, carry the right foot 12 inches to the right, place the left foot beside the right, left knee straight. Continue the cadence of quick time. (The side step is executed in quick time from the halt and for short distances only.)

*Back Step.*—Being at a halt the commands are, **Backward MARCH**. At the command **MARCH**, take steps, beginning with the left foot, 15 inches straight to the rear.

*To March to the Flank.*—Being in march the commands are: **By The Right (Left) Flank—MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) in marching and step off in the new direction.

*Oblique March.*—Being in march the commands are **Right (Left) Oblique—MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) oblique in marching and step off in the new direction.



To resume the original direction, the commands are—Forward, MARCH. At the command MARCH each individual faces half left (right) in marching then moves straight to the front.

*Change Step.*—The commands are Change Step, MARCH. Being in march at quick time, at the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, plant the toe of the right foot near the heel of the left and step off with the left foot. (Execute the change on the right foot similarly, the command MARCH being given as the left foot strikes the ground.)

*To the Rear.*—To face to the rear in marching, being in march, the commands are: To The Rear, MARCH. At the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, turn to the right about on the balls of both feet and immediately step off with the left foot.

*Other Marchings.*—March other than at Attention. The commands are: Route Step, MARCH or At Ease, MARCH. Route Step MARCH, at the command MARCH Volunteers are not required to march at attention or to maintain silence. At Ease, MARCH is the same as Route Step, MARCH, except that Volunteers will maintain silence.

*Dismissing the Squad.*—The unit being at a halt the leader calls the unit to attention, if they are not at attention, from a point six paces in front of the center of the unit. He then will give the command—DISMISSED. Volunteers are then free to go and do as they please until the next regularly scheduled drill period.

## ***Forming the Platoon.***

To form the platoon, which consists of 3 squads—the command, **FALL IN** will be given by the senior leader facing the area on which he wishes the platoon to form. At this command the unit will form facing the leader with its center 6 paces to his front in 3 parallel lines (each of these lines constitutes a squad). (Should there be insufficient men to form 3 complete squads, skeleton squads of as near equal number as possible will be formed in 3 ranks, squad leaders placing themselves directly behind one another.)

Fig. V.—A Platoon in Column of Squads



*From this formation the unit can march; forward, to the right, or to the left.*

## ***Platoon Movements.***

At the command: Forward **MARCH**, each man steps off with his left foot directly to his own front preserving his relative position and so regulates his step that the ranks remain parallel to his original front.

At the command: Right (Left) **FACE Forward MARCH**, the unit executes a right face on the heel of the right foot and ball of the left foot at the word **FACE** and at the word **MARCH** they step off with their left foot as in moving to the front. (Left face is performed by turning on the heel of the left foot and the ball of the right foot.) In the movements to the right or left the commander of the unit takes a position three paces in front of the left file of his command, at double time if necessary.

Being in a column to change direction the commands are- Column Right (Left) **MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground the first man of the leading element on the right (left) advances one step and then steps off in the new direction using half steps until the men to his left (right) are abreast of him. Full step is then resumed.

*Close Interval- Normal Interval.*— Being in column of threes at normal interval between squads to March or form at Close Interval, the commands are: Close, **MARCH**. At the command **MARCH**, the squads close to the center by

obliquing until the interval between men is 4 inches. The center squad take up the half step until the dress has been regained.

If this movement is executed from the halt, the squads close toward the center by executing Right or Left Step until 4-inch intervals are reached.

Being in column of threes at close interval between squads to March or form at Normal Interval, the commands are: Extend, MARCH. At the command MARCH, the squads open to the right and left from the center by obliquing until the normal interval is regained.

If this movement is executed from the halt, the squads Right or Left Step until normal interval is regained.

*Change Direction.*—Being in column of threes to change direction, the commands are: Column Right (Left) MARCH. The right flank man of the leading rank is the pivot. At the command MARCH, given as the right foot strikes the ground, the right flank man of the leading rank faces to the right in marching and takes up the half step until the other men of his rank are abreast of him, then he resumes the full step. The other men of the leading rank oblique to the right in marching without changing interval, place themselves abreast of the pivot man, and conform to his step. The ranks in rear of the leading rank execute the movement on the same ground and in the same manner as the leading rank.

**Fig. VI**  
**Forming the Citizens' Defense Corps**  
**for Parade**

(Services will form and move as platoons)

●	Mayor, Defense Coordinator and Dignitaries.
□	Commander, C. D. C.
▬	Staff.
▬	Messengers.
▬	Drivers.
□	Fire Department Chief.
▬	Auxiliary Firemen.
▬	Rescue Squads.
□	Police Department Chief.
▬	Auxiliary Police.
▬	Bomb Squads.
□	Colors.
□	Warden Service Chief.
▬	Air Raid Wardens.
▬	Fire Watchers.
▬	Emergency Food Housing Units.
□	Medical Service Chief.
▬	Medical Field Units.
▬	Nurses' Aides Corps.
□	Public Works Service Chief.
▬	Demolition and Clearance Crews.
▬	Road Repair Squads.
▬	Decontamination Corps.





**OFFICE OF CIVILIAN DEFENSE**

**WASHINGTON, D. C.**

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**OFFICIAL BUSINESS**

**PENALTY FOR PRIVATE USE TO AVOID  
PAYMENT OF POSTAGE, \$300**

*A Handbook for*  
**FIRE WATCHERS**



*United States*  
**OFFICE OF CIVILIAN DEFENSE**  
*Washington, D. C.*



*A Handbook for*  
**FIRE WATCHERS**



Prepared by the Training Section

*United States*

**OFFICE OF CIVILIAN DEFENSE**

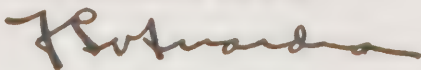
U. S. Government Printing Office, Washington, D. C., January 1942.

# PREFACE

This is one of a series of civilian defense handbooks prepared by the United States Office of Civilian Defense. The purpose of each handbook is to instruct the individual enrolled civilian defense worker in his duties, and to serve as a manual for reference.

The measures for safeguarding civilians against the effects of air attack, which are described in the following pages, have become a necessary part of the defensive organization of any country open to air attack.

Every State and municipality should take such legal or administrative action as may be necessary to provide for the organization, direction, and training of its Decontamination Squads.



F. H. LaGuardia,  
*U. S. Director Civilian Defense.*

Washington, D. C.  
*December 1941.*

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***This Book Belongs to:***

(First name)

(Initial)

(Last name)

### My Home Address Is:

My Telephone Number Is:

I Am \_\_\_\_\_ Fire Watcher.

Post No. \_\_\_\_\_, city of \_\_\_\_\_

State of \_\_\_\_\_

**In case of emergency, notify:**

## ***A Handbook for***

# **FIRE WATCHERS**

### ***Chain of Command for Fire Watchers.***

In a local plan for Civilian Defense, the Fire Watchers Service comes under the command of the Senior Air Raid Warden; however, when bombs begin to fall, the Fire Watcher is expected to act often on his own initiative. He may be assigned to work alone or with a small group, but his is the individual responsibility for spotting and combatting incendiary bombs and if possible, preventing these bombs from starting fires.

### ***The Fire Watcher's Station.***

The basic unit of Civilian Defense against air attack is a Sector containing the homes of about 500 persons. Its extent will depend on the character of the homes or buildings. One apartment house may easily accommodate 500 persons. Where detached houses are the rule, a number of blocks or squares may form a sector. Each sector or large building is served by an Air Raid Warden Post. Within each sector, stations for Fire Watchers will be established on high places such as roofs, towers, etc. so that all roof areas in the sector may be watched from the fewest stations. Stations should be so located that they can be reached quickly and provision should be made for storage of the necessary equipment.



Place watchers on high places, standpipes, steeples, etc., so that all roof areas can be watched with the fewest posts.

## ***Number of Fire Watchers.***

There will be from 10 to 50 Fire Watchers for each 500 persons. Their exact number depends upon the character of the Sector and the inflammable material in the houses or buildings.

In addition to the regular Fire Watchers responsible for a sector, there will be many individual householders or employees in buildings performing the task of spotting incendiaries on their own premises. Actually, every person in a sector must watch for fires, but special reliance must be placed upon the skill and ability of the trained personnel.

## ***Equipment of Fire Watchers.***

Each Fire Watcher should be supplied with the necessary tools. These tools will be distributed by the Senior Air Raid Warden of the Sector unless some other arrangement is followed locally. Tools will be furnished on a loan basis and the utmost care should be taken of them. Should any of his tools become damaged, the Watcher should report the matter at once to his superior so that they may be repaired or replaced. Equipment should be kept at a convenient location in accordance with specific plans adopted locally.

Equipment may consist of the following types:

1. Pack-type pump containing approximately  $7\frac{1}{2}$  gallons of water and contained pump similar to stirrup type.

This pump is for use in combatting fire caused by an incendiary bomb and is easily carried.

2. Extra buckets for carrying water for pump. Since the water supply may be outside the building where bomb is being tackled, it may become necessary to send for more water. A reserve supply should be stored in the buckets at all times.

3. Bucket for sand.

If the Fire Watcher is not issued a pack-type water pump, he will combat incendiaries by the sand method.

4. Long-handled shovel or scoop.

This shovel or scoop is for covering the incendiary with sand or dirt, for lifting the sand-covered incendiary into sand bucket, and for carrying bucket containing incendiary outside the building.

5. Hand axe or hatchet.

The hand axe or hatchet is for use in event an incendiary crashes through roof and attic flooring into the space between floor and ceiling, or through the sidewall of frame house, lodging between outer and inner walls. It may become necessary for the Fire Watcher to chop away portions of the floor or wall to reach the bomb.

6. Flashlight.

The Fire Watcher may need to use light in searching through attics, sidewalls, or roof spaces of houses in which an incendiary has fallen. Care should be taken at all times to make certain the light does not become visible during a blackout.

Fire Watchers should know the location of these items and of all other pumps and extinguishers near their stations, and be able to find them quickly under any condition

### ***Your Duties as a Fire Watcher.***

You have been chosen as a Fire Watcher because you are known to be reliable and responsible and

because you have the needed qualities of stamina, ability to endure smoke and heat, and courage.

In your Sector are the homes of some hundreds of your friends and neighbors. It is your responsibility to see that everything possible is done to protect those homes or buildings against fire caused by incendiary bombs.

As a Fire Watcher you have certain specific duties to perform. You must study them, review them, practice them over and over so that you may carry them out in an air raid without failure or error. You must know your sector as intimately as others know their own homes.

You must know your people well. To them, you are both instructor and protector. In every way, you must seek to gain their confidence so that in time of stress you may more easily aid them or direct them.

You are not a policeman, nor are you a fireman, but *within the limits of your authority*, you have some duties like theirs. Yours is a preventive job. You should endeavor to persuade people to follow the Warden's suggestions or directions for fireproofing homes and other buildings. Report any cases of noncompliance to the Senior Warden. This preparatory work will help you in combatting any flames caused by incendiaries.

No fire department in the world could cope with a great conflagration that could be caused by incendiary bombs. You must prevent the conflagration. The great fire of London, caused by incendiaries, must not be repeated in this country. You have a position of leadership and trust that demands an effort not less than your best.



## ***Duties Preliminary to an Air Attack.***

There are several methods of treating attics of houses and buildings so as to lessen the danger of incendiary fire. You are charged with the responsibility of instructing your friends and neighbors in your sector as to these methods and seeing that they are followed. There are also various methods of combatting an incendiary bomb. You must see that these methods are known to the people in your sector and that they are prepared to use them. And finally, you must take an active part in combatting incendiaries. You must watch them fall and must put them out.

## ***Detailed Knowledge of the Sector.***

Fire Watchers should draw maps of the area assigned to them to show location of:

- A. All buildings, the character of each, and access doors to roofs and attics.
- B. Fire hydrants, alarm boxes, auxiliary water storage, fire stations, and reserve supplies of sand or dirt.
- C. Places of special danger, such as oil storage tanks, filling stations, lumber yards, other highly inflammable materials, fire-trap houses.
- D. Police stations, first-aid posts, hospitals, decontamination stations, road repair stores, and other organized services of Civilian Defense.

It is not enough to assemble this information on a map. As a Fire Watcher, you must know it by heart, and be able to find any required position or place in a complete blackout.































## ***Detailed Knowledge of the People.***

Your neighbors must be studied carefully as to temperament and ability to assist in emergency.

You should know all persons with special training useful in fighting fire.

## ***Standard Map Symbols.***

Use these standard symbols on your map—they are intended to make clear the facts you and others will need to know in a hurry.

 Warden's Post	 Bomb Crater
 Fire Watcher's Station	 Roped-off Area
 Fire Alarm	 Street Car Tracks
 Telephone	 Double Tracks
 Air Raid Shelter	 Cisterns or Water Reserves
 Gas-Proof Air Raid Shelter	 Sector Limits
 Entrance to Shelter	 Zone Limits
 Fire Station	 Site of Gas Bomb
 Decontamination Squad Depot	 Contaminated Area (For large area, blue cross-hatch)
 Repair Squad	 Street Lamp
 Casualty Station	 Fire Hydrant
 Decontaminating First Aid Station	 Sewer Gratings
 Bomb Squad Station	 Manhole
 Location of Incident (Show number in center)	 Tree
 Demolished Building	 Sandbags

## ***Training Selected People.***

Certain people in every Sector should be selected and trained to assist the Fire Watchers. Some people will be needed to carry extra supplies of water, to furnish sand or dirt for combatting an incendiary; and many should be trained to do the same work as yourself.

## ***The Fire Watcher in War.***

In time of war or other emergency, think of yourself first as a leader chosen from the neighborhood to do the right thing, with your neighbors and for them. The keynote of your conduct must be courage and presence of mind. You have been selected by the Senior Air Raid Warden to fill a position of trust.

## ***Air Raid Warning.***

When the air raid warning signals sound, put on your arm band, secure your personal equipment and go to your post. Reassure all those you meet that the services of Civilian Defense are on the job and will watch over them.

## ***First Duties Following an Air Raid Warning.***

As soon as you reach your station, make a quick survey to see if any incendiaries might have fallen from a plane unheard during the sounding of the warning. See that your equipment is ready for instant action. Then settle down to your vigil. You must keep sharp watch at all times for the flare of an igniting incendiary bomb. Make sure that you have shelter from

possible bomb splinters. You will be required to remain at your post throughout the bombing attack, or, in the case of a long alert, until relieved by order of the Senior Warden of your sector.

### ***When Bombs Fall.***

If small incendiary bombs lodge in nearby buildings, your first duty is to warn the occupants, then deal with the fire. Put out the fire if you can do so quickly and then report the locations of these bombs immediately by telephone to the designated Warden's Post or Fire Report Center. If you cannot put the fire out alone, send a report immediately that help is needed.

### ***Where and How to Report.***

On the opposite page is a model for reports which you are to make on each incendiary bomb incident. As soon after an air raid as you have all required information, make a report following this form. Include ALL the information that is pertinent. Your Air Raid Warden needs this information for his report for the Sector.

If unusual difficulty was met with in extinguishing an incendiary bomb, report the details to the Air Raid Warden. It might be a new type of bomb. If it is difficult to reach the roof or attic of certain buildings or houses, report in detail. Means may be devised by which you will be enabled in the future to keep a closer watch on the surrounding property and gain easier access in event a bomb falls.

ADMINISTRATIVE OFFICERS  
AND PLACE TO REPORT

This is post No. \_\_\_\_\_ City \_\_\_\_\_

Senior Warden \_\_\_\_\_

Home address \_\_\_\_\_

Telephone \_\_\_\_\_ Alternate phone \_\_\_\_\_

Location of post \_\_\_\_\_  
\_\_\_\_\_

Telephone \_\_\_\_\_ Alternate phone \_\_\_\_\_

Alternate place to report fires \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_

Special instructions on reporting:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# **FIRE WATCHER'S REPORT FORM**

*(Form of Report to Designated Center)*

Commence with the words "INCENDIARY  
BOMB INCIDENT."

Designation of REPORTING AGENT:

(Fire Watcher \_\_\_\_\_)

POSITION OF occurrence:

Exact location in house or building:

Damage:

Time of occurrence (approximate):

Unusual difficulty in extinguishing bomb:

Unusual difficulty in reaching bomb:

Remarks:

Finish with the words "REPORT ENDS."

See that each report you send contains all the pertinent information included in the table above. Do not use this page for reports—it is a check list to help you make sure you have included everything.



## ***Methods of Combatting Incendiary Bombs.***

Several types and sizes of incendiary bombs have been tried at one time or another by different countries, but the kind most likely to be used, because of its effectiveness, is a bomb commonly referred to as a magnesium bomb, probably weighing no more than 2 pounds. As many as 2,000 of these bombs can be carried in a modern bombing plane. This type of bomb easily penetrates roofs or even side walls of frame buildings.

Magnesium bombs consist of a thick-walled tube 9 inches long and 2 inches in diameter, made of an alloy of magnesium with a small proportion of aluminum. On one end of this bomb is a tail 5 inches long to steady it in flight. The bomb is filled with an igniting compound of the thermit type. The detonating unit to set off the ignition charge may be located in either the nose or tail of the bomb. The bomb functions on impact.

Recently an explosive charge has been added to some of these bombs to make them more difficult to combat. The explosive charge goes off approximately 2 minutes after the bomb strikes.

The usual type of electron bomb (i. e., without explosive charge) gives forth a violent reaction during the first minute or so following impact. The thermit igniting compound spews out of vent holes near the end and pieces of molten magnesium may be thrown as far as 50 feet. After the first minute, the bomb becomes less active because the magnesium tube melts and the pressure within is released.

The bomb burns for as long as 20 minutes after impact but usually burns itself out in 10 to 15

minutes. Experience has shown that in a bombing attack on a modern city about 1 out of 6 bombs starts a fire while the other 5 bombs fall into streets, gardens, or other open places where they can be permitted to burn themselves out.

### ***Treatment of Attics.***

A considerable degree of protection can be given to a floored attic or roof space by covering the floor with a 2-inch layer of sand, cinders, ash, or dirt. A netting of chicken-wire should be placed 6 inches to a foot above this layer of protective material. The bomb, crashing through the roof, would then fall into the chicken-wire netting and burn out there, with the molten magnesium falling on the protective materials. There is danger that the bomb might penetrate sand, dirt, cinders, or ash if it fell directly on them.

Upper woodwork should be protected with the flame resisting paint or whitewash. Ordinary whitewash it is found to give fairly satisfactory protection for woodwork above the fallen bomb. It will not protect any wood on which the bomb might be lying.

Inflammable materials should be removed from the attic. An accumulation of the usual "junk" in attics makes the task of combatting an incendiary even more difficult. Several buckets of dry sand or water should also be kept in or handy to the attic at all times.

### ***Magnesium Bombs.***

As previously emphasized, it is clearly of the utmost importance that the magnesium bomb should be tackled as soon as it falls if possible.

Wherever there is inflammable material about, the bomb will start a fire immediately and this should be dealt with first. Care should be taken to direct the stream of water into the seat of the fire and not indiscriminately into the smoke and flame.

When water is applied to a bomb, the effect is not to extinguish the burning magnesium, but to cause accelerated combustion so that the bomb, instead of burning in the ordinary way, obtains an increased supply of oxygen and burns out in about two minutes. Hydrogen is released from the water and burns in the air above the bomb.

If, therefore, too much water is applied at one time, the effect is of an explosive character. Water applied as a jet produces this effect and scatters the burning magnesium, pieces of which might strike the Fire Watcher or spread the fire. Water applied to the bomb in the nature of a spray does not produce this effect, but causes the magnesium to be rapidly consumed. Meanwhile, the surroundings are kept wet and the fire is prevented from spreading. The hose connected to the back-type handpump should therefore have a dual purpose nozzle, one that can throw a jet or a spray.

If a spray nozzle is not available, a satisfactory coarse spray can be obtained by placing a finger or thumb across the jet nozzle.

Whether the fire or the bomb should be tackled first must depend on the seriousness of the fire. The fire must not be allowed to spread or get out of control, but on the other hand, water should be sprayed on the bomb as early as possible to prevent the metal from burning through the floor.

It will usually be necessary to control the fire with the jet, then use the spray to deal with the bomb, and finally to extinguish the fire with the jet. Care should be taken in approaching the bomb for the first minute or two while the igniting compound is giving forth its violent reaction.

It is desirable to have at least two persons tackle each incendiary bomb, one to operate the back-pack pump and one to carry spray buckets of water. However, one person can usually do the work in an emergency.

If a pump extinguisher is not available, then the bomb should be covered with sand or dirt. This is why every attic should have buckets of water or sand kept in it.

To cover an incendiary bomb with sand or dirt, the Fire Watcher should use a long-handled shovel or scoop. Cover the bomb, wait for any violent sputtering to stop, then, using the shovel, scoop up the bomb and sand and deposit it in the bucket. Leave several inches of sand in the bucket. Then, using the shovel as a lever, lift the bucket and carry it outdoors. The sand or dirt will not extinguish the bomb, but it will slow down its rate of burning. After removing the bomb, make sure all fire in the woodwork of the house is extinguished.

A wet blanket folded and slung across the arm will help to provide protection against the heat and sputtering of magnesium.

### ***Oil and Gasoline Bombs.***

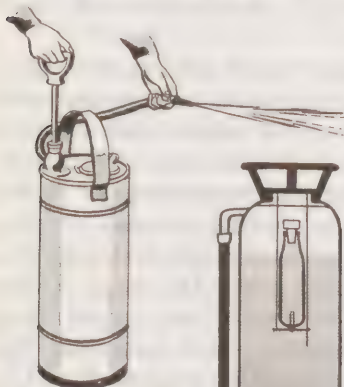
Although these materials, on burning, liberate a great deal more heat than magnesium, they are not suitable for incendiaries for use in small bombs. A gasoline bomb weighing as much as a magnesium

bomb, would certainly contain only one pint of gasoline. The incendiary effect of oil or gasoline is almost entirely upward. A large amount can be burned on a floor without even scorching the wood. The fire can be smothered with sand or similar material. The most effective extinguisher for oil or gasoline is a foam appliance; however, water will extinguish small amounts of the inflammable material. Care should be used in this type of incendiary so that the flaming liquid is not spread by the water.

### **About Fire Extinguishers.**

Many houses and public buildings have fire extinguishers. They will be as useful as ever in putting out fires caused by an incendiary bomb.

(See page 31 for precautions.)



*A simple pump-tank extinguisher. Can be refilled during use.*



*Soda-acid type. Turn upside down. Chemicals create pressure, do not affect fire which is quenched by water stream.*



*Foamite extinguisher. Turn upside down. Chemicals create blanket over fire.*



## ***Thermit Bombs.***

Compositions of the thermit type are most frequently used as priming agents as for the magnesium alloy bomb. Thermit was used in the First World War as an incendiary bomb filler but was not considered efficient. Thermit is a mixture of iron oxide and *granulated aluminum*, which on burning liberates molten iron. Although thermit produces a very high temperature that enables it to penetrate even through thick steel, it burns much more rapidly than magnesium and generates less heat for weight volume.

Nothing can be done to extinguish the thermit while the initial reaction takes place, but surroundings can be wetted down to keep them from bursting into flames. The room or space below must also be taken care of as the molten iron will run quickly through floor cracks and burn holes in the floor.

## ***Final Precautions.***

Never leave a house or building into which an incendiary bomb has fallen without making a thorough check of the premises. Experience abroad has shown that often more than one bomb will have struck. It is of no use to remove one source of danger only to find later that the house has been gutted by a second incendiary bomb. Search the house from attic to cellar. Quite often an incendiary bomb will have struck the side of the house and crashed through the wooden wall, or through a window. Make sure that no possible source of fire remains.

Check carefully the eaves and gutters. A bomb might be lodged where you cannot easily see it.



Approach all incendiary bombs with caution. You must use reasonable care in tackling them.

Keep all doors closed. A closed door will hold back heat and smoke almost indefinitely and will hold back flame for a considerable time. It will also restrict the movement of air currents.

If you have to search a whole house, start at the top and work down to the comparative safety of the lower floors.

Any fire will create smoke. Air near the floor will be comparatively free of smoke, and will be cooler. Therefore, in a room filled with smoke, always crawl with the mouth as near the floor as possible. The air will be purer, one can see better, and there is not the danger of falling over things.

If you have to open a door towards you, when there may be a fire on the other side, place one foot about 3 inches away from the opening edge. The door will be checked after swinging open a few inches, you will be protected by the door itself, and you can shut it again if necessary. Hot gases are generated by fire and if the door is not checked, it may burst open and flames and smoke and hot air may overcome anyone on the other side.

If the room is on fire, keep the door closed until your equipment is ready, then, cautiously opening the door, examine the situation. Study the nature of the fire and turn your jet of water on it. The ordinary pack-type extinguisher can handle most room fires if they are located early enough. If the fire is beyond your control, send in a report as you have been instructed.

***This Page Is for Watcher's Notes.***

***This Page Is for Watcher's Notes.***

# BLACKOUTS

Blackouts are ordered only on the authority of the War Department. A blackout may be ordered during any period when hostile forces are believed to be in the vicinity, whether or not enemy airplanes have been sighted.

**"Blacking Out"** a city means that light sources must be so hidden or dimmed that an enemy bomber will have difficulty in finding the target and lack aiming points such as main street intersections. Following are the general plans used.

**Street Lights.** These are fitted with low-watt bulbs and covers that diffuse the light.

**Automobiles.** Headlights must be covered except for a small pair of slits and hooded.

**Traffic Lights.** Are treated the same way as automobile headlights.

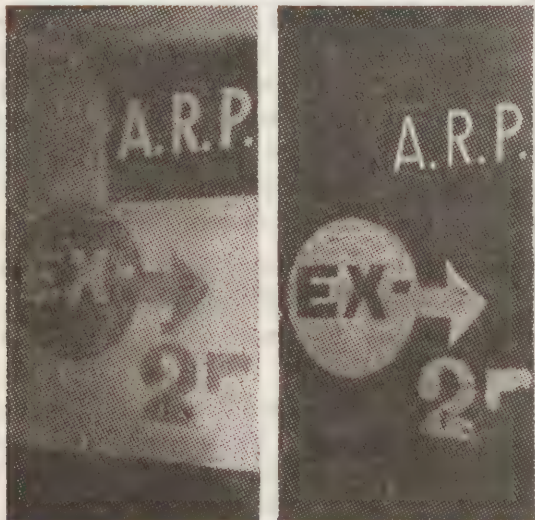
**Buildings.** Windows and doors must be covered with opaque materials. Paint on the glass, heavy curtains, light "baffles" or screens are some of the ways. No cracks of light must show.

**Aids to Seeing.** Since people have to move about during a blackout, the lack of light may be somewhat offset and safety promoted by—



1. Painting curbs, trees, poles and hydrants with white paint. There is a luminous paint, also, that gives off a faint blue light quite visible in total darkness.

2. Painting signs of luminous paint or making them of fluorescent material on which shines ultra-violet or "black" light or installing dimly lighted signs with horizontal screens to diffuse the light.



3. Painting white fenders and stripes around automobiles.

Members of the Citizens' Defense Corps who have outside duties during a blackout can be identified more easily if they wear a white cap or white-painted helmet; also a white belt fitted with crossed straps over the shoulders.



## ***Individual Conduct During a Blackout.***

Observe traffic rules. Keep to the right and remember the man or vehicle approaching *from* your right *has* the right of way.

If you must smoke, go into a hallway or covered place to strike the match. No smoking in the open is an even better rule. Make all crossings at intersections. It is hard for a driver to see you.

Be sure that everyone you know is acquainted with these simple rules.



**DO NOT** run when air raid warnings sound after dark during blackouts.



Use your flashlight as little as possible, if at all. **Never** point it upward.



Curb edges and direction signs painted white will help you find your way.



Keep pets on leash if you take them out after dark.



If an air raid warning sounds, get under cover, you may be hit by shell fragments.



If you don't know the neighborhood the first policeman or warden will tell you where to go



# ARMY



When an observer sights a group of hostile planes, he picks up his telephone (1) and says *Army Flash*. The Central Operator (2) at once connects him with the assigned Filter Center (3) to which he reports the type of planes, number, height, and direction of flight. When several reports agree, watchers transmit the data to an Information Center (4) where developments over a large area are plotted on a huge map.

Watching the map, Air Corps officers order interceptor planes into the air, (5) direct them to contact with the enemy; another officer notes the cities threatened and flashes a yellow, blue, or red alarm, according to the degree of danger, to the proper Warning District Center (6).

At this point, Civilian Defense takes over from the Air Corps, telephones the warnings to Control Centers (7) within the Warning District. And here the Commander of the local Citizens' Defense Corps orders the alert, has the public warning sounded usually short blasts on air horns, power horns or steam whistles or on the wailing sirens—and if the bombers arrive overhead, directs the operation of passive defense. Learn the air raid warning for your city.

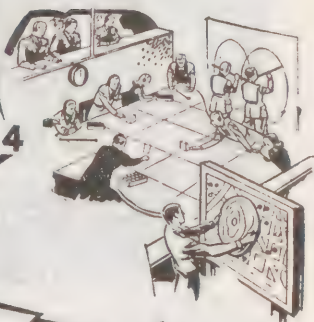
# FLASH



2



3



4

6



5



7





The Refuge Room

## WHAT TO DO IN AN AIR RAID

At the yellow warning, if you are not already on duty, you will be summoned to your post and will carry out orders until relieved. However, here are the rules for those who do not have assigned duties when the air raid warning comes. Memorize them carefully so that you can in turn instruct others. Here is what to tell them:

1. If away from home, seek the nearest shelter. Get off the street.
2. If you are driving, first park your car at the curb; be sure all lights are shut off.
3. If you are at home, send the others to the refuge room. This should be a comfortable place with as little window exposure as possible, equipped with drinking water, things to read, toilet facilities, a flashlight, a portable radio, a sturdy table, and food if you like.
4. Turn off all gas stove burners but leave pilot lights, water heaters and furnaces alone. Leave electricity and water on. Fill some large containers or a bathtub with water.
5. Check up on blackout arrangements. Don't let a crack of light show to the outside.



6. See that everyone's eyeglasses and dentures are in the refuge room. There should be additional warm garments for everyone, too.

7. Keep out of line of windows. Fragments and glass splinters cause most casualties.

8. If bombs fall nearby, get under a heavy table, an overturned davenport.

9. Don't rush out when the "all clear" signal sounds. Maintain the blackout. The Raiders may return.

10. Otherwise, keep cool; be sensible and set an example to others.

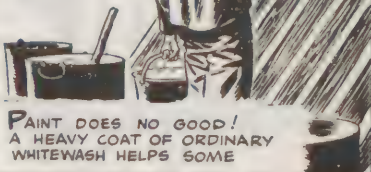
## FIRE DEFENSE

IT WILL BE VERY DIFFICULT TO FIGHT A MAGNESIUM BOMB UNLESS SOME WORK IS DONE BEFORE THE ATTACK



ALL FURNITURE TRUNKS AND JUNK OF ALL KINDS SHOULD BE REMOVED FROM ATTIC OR TOP FLOOR!

ROOF BEAMS JOISTS AND STUDS CAN BE TREATED TO RESIST FLAME — GIVING MORE TIME TO REACH THE BOMB



PAINT DOES NO GOOD! A HEAVY COAT OF ORDINARY WHITEWASH HELPS SOME



# HOW THE MAGNESIUM BOMB WORKS

THE MOST EFFECTIVE  
INCENDIARY BOMB  
MADE SO FAR  
IS THE  
**MAGNESIUM  
BOMB**



LENGTH, ABOUT 14" WEIGHT, 2.2 POUNDS

A LARGE BOMBER  
CAN CARRY 1000  
SUCH BOMBS!



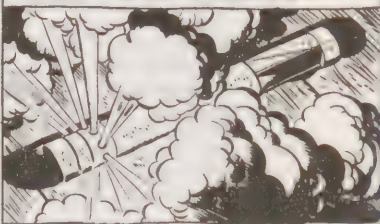
THEY ARE USUALLY RELEASED  
20 TO 50 AT A TIME, SPREAD  
LIKE SHOT BEFORE STRIKING.

DROPPED FROM A HEIGHT OF 20,000  
FEET, THEY DEVELOP ENOUGH FORCE  
TO PENETRATE AN AVERAGE ROOF...



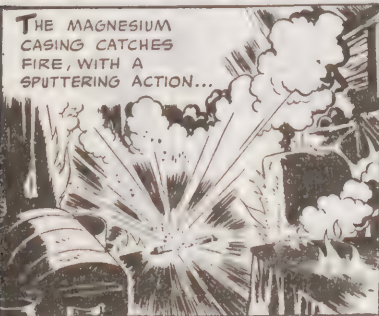
...THUS, THEY USUALLY START BURNING  
IN A TOP STORY OR ATTIC

THE THERMITE FILLING OF  
IRON OXIDE AND FINELY DIVIDED  
ALUMINUM IS THEN IGNITED AND  
DEVELOPS A FIERCE HEAT OF  
**OVER 4500 DEGREES!**



THE FLAME ROARS OUT OF THE  
ESCAPE HOLES.

THE MAGNESIUM  
CASING CATCHES  
FIRE, WITH A  
SPUTTERING ACTION...



...FLAMING MOLTEN METAL IS THROWN  
ABOUT AND SURROUNDING INFLAMMABLE  
MATERIAL CATCHES FIRE

IF NOT QUICKLY  
QUENCHED, THE  
BOMB WILL BURN  
THROUGH THE  
FLOOR, SETTING  
ADDITIONAL  
FIRES ON  
THE FLOOR  
BELOW...



BUT, WITH PROMPT  
ACTION AND SIMPLE  
TOOLS, A MAGNESIUM  
BOMB CAN BE QUENCHED!

# CONTROLLING WITH WATER

**TO FIGHT A BOMB WITH WATER, YOU NEED TWO MEN AND SPECIAL EQUIPMENT. REMEMBER, YOU CAN'T PUT OUT THE BOMB — YOU FEED IT WATER, TO BURN OUT!**

**ONE MAN PUMPS 80 STROKES A MINUTE TO KEEP A STRONG ENOUGH PRESSURE TO THROW A JET 30 FEET, AS SPRAY, 15 FEET. ONE MAN FIGHTS THE FIRE.**

**YOU USE UP A BUCKET IN 1½ MINUTES**



**SPECIAL DOUBLE ACTION PUMP WITH 30 FEET OF HOSE AND SPECIAL NOZZLE NEEDED.**



**JET ON SURROUNDINGS!**



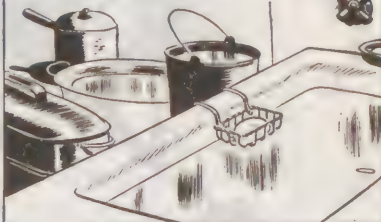
**SPRAY ON BOMB**

**A THIRD PERSON IS MOST USEFUL TO CHECK OTHER POINTS FOR FLAME REPLENISH WATER AND RELIEVE PUMPER.**

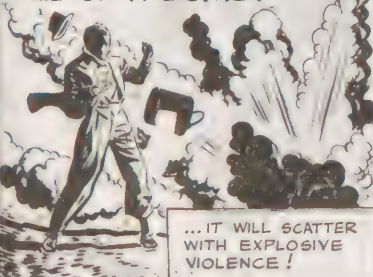


**AMPLE STORAGE OF WATER SHOULD BE PROVIDED IN ADVANCE, AS WATER MAINS MAY BE BROKEN BY HIGH EXPLOSIVES AND PRESSURE LOST! FILL THE TUB, EXTRA PAILS AND DON'T FORGET IN A PINCH —**

**THE CONTENTS OF HOT WATER OR HEATING BOILERS!**



**NEVER THROW THE CONTENTS OF A WATER PAIL ON A BOMB!**



**... IT WILL SCATTER WITH EXPLOSIVE VIOLENCE!**

**IF CONTROL OF THE BOMB SEEMS DOUBTFUL, HAVE AN ALARM TURNED IN, BUT CONTINUE FIGHTING THE BOMB UNTIL HELP ARRIVES OR SUPPLIES ARE EXHAUSTED!**



**1 LEARN NOW HOW TO CALL**



**2 LEARN NOW LOCATION OF NEAREST ALARM...**

**MILTON CANIFF**



## CONTROLLING WITH SAND

APPROACH THE BOMB IN A CROUCHING OR CRAWLING POSITION. PLACE THE SAND BUCKET, UPSET, TO ALLOW A FULL-ARM SWING TOWARD THE BOMB



TRY TO COVER THE BOMB WITH DRY SAND, TO CONFINE IT'S ACTION, SO THAT YOU CAN GET NEAR ENOUGH TO SCOOP IT UP ON THE SHOVEL



WHEN THE BOMB IS UNDER FAIR CONTROL, SCOOP IT UP ON THE SHOVEL, FIRST RIGHTING THE BUCKET, BUT LEAVING SOME SAND IN THE BOTTOM...



... IF THE BOMB CAN BE DROPPED FROM A WINDOW TO SOME PLACE WHERE IT CAN BURN OUT WITHOUT HARM —

**GET RID OF IT THAT WAY!**



... OTHERWISE, PUT IT IN THE BUCKET ON TOP OF SAND, COVER IT WITH MORE SAND ...



... THEN, HOLDING THE BUCKET ON THE SHOVEL, CARRY IT OUT OF THE HOUSE ...





## ABOUT FIRE EXTINGUISHERS

Many houses and public buildings have fire extinguishers. They will be as useful as ever in putting out fires caused by an incendiary bomb. For putting out the bomb itself, the extinguisher may not be suitable.

Read the label. If it says that the contents include **CARBON TETRACHLORIDE**, it cannot under any circumstances be used on a magnesium bomb. It is not only ineffective, it may cause dangerous gas to be generated. After the bomb is burnt out, use it on any remaining fire.

All water-type extinguishers are suitable. If the label says **SODA-ACID**, that's simply a means of creating pressure in the extinguisher. Turn it upside down, use it. You can get a spray effect by putting the thumb over the nozzle, use the jet on surrounding fires. However, *one extinguisher is not enough to burn out a magnesium bomb*. And you cannot refill the extinguisher.

It is best to have sand or pump-bucket equipment handy, use them on the bomb, and save the extinguishers for resulting fires.

A foam extinguisher will also help to control a bomb, but one extinguisher load will not finish the job.

See that the extinguishers you know about are ready for use.

# CHEMICAL WARFARE AGENTS




























## REFERENCE AND TRAINING CHART

32

LEGEND

			
HOSPITAL CASE	FIRST AID STATION	LUNG PROTECTION	COMPLETE PROTECTION
		NEEDED	NEEDED

- The importance of proper first aid for gas victims cannot be overemphasized. The following are general rules which apply in all cases.
- Act promptly and quietly; be calm.
  - Put a gas mask on the patient if gas is still present or, if he has a mask on, check to see that his is properly adjusted. If a mask is not available, wet a handkerchief or other cloth and have him breathe through it.
  - Keep the patient at absolute rest; loosen clothing to facilitate breathing.
  - Remove the patient to a gas-free place as soon as possible.
  - Summon medical aid promptly; if possible, send the victim to a hospital.
  - Do not permit the patient to smoke, as this causes coughing and, hence, exertion.

CLASS	NAMES AND SYMBOLS	FORM	ODOR	PERSISTENCE	TACTICAL CLASS	PROTECTION	FIRST AID (After removal from exposed area)	PHYSIOLOGICAL EFFECT
VESICANTS	MUSTARD <small>HC-CALORITET, SULFONE</small> <chem>S(CH3CH2)2Cl2</chem>	LIQUID AND VAPOR	 Bacon, Mustard, Mustard	One day to one week. Longer if dry or cold.			Wash face, remove liquid mustard with protective ointment, bleach paste, or kerosene; bathe, wash eyes and nose with soda solution.	Delayed effect. Burns skin or mucous membrane; inflammation of respiratory tract leading to pneumonia. Eye irritation, conjunctivitis.
	LEWISITE <small>CALORITET, DICK-BACINE</small> <chem>ClCH=CHCl</chem>	LIQUID AND VAPOR	 Mustard	One day to one week. Longer if dry or cold.			Wash face, remove liquid (Lewisite with hydrogen peroxide, 1% in glycerine or kerosene; bathe; wash eyes and nose with soda. Bathe—Doctor.	Burning or irritation of eyes, nasal passages, respiratory tract, skin. Advanced poison.
LUNG IRRITANTS	CHLOROPICRIN <small>HYPOCROPHICRIN</small> <chem>ClCH=NO</chem>	GAS	 Fragrant, acid	Open 6 hours. Wounds 12 hours.			Wash eyes, keep quiet and warm. Do not use bandages.	Causes severe coughing, crying, vomiting.
	DIPHOSGENE <small>TRICHLORODIPHOSPHITE, CARBON DIBIPHOSPHITE</small> <chem>ClC(=O)OC(=O)Cl</chem>	GAS	 Fragrant, acid	30 minutes.			Keep quiet and warm. Give coffee as a stimulant.	Causes coughing, breathing hurts, eyes water, lacer.
LACHRYMATORS	PHOSGENE <small>CALORITET, CARBONIC</small> <chem>COCl2</chem>	GAS	 Bitter, dry, green zone	10 to 30 minutes.			Keep quiet and warm, bed rest. Coffee as a stimulant. Loosen clothing, no alcohol or cigarettes.	Irritation of lungs, occasional vomiting, tears in eyes, dazed feeling. Occasionally symptoms delayed. Later collapse, heart failure.
	CHLORACETOPHENONE <chem>C6H5CO-CH2Cl</chem>	GAS	 Apple blossoms	10 minutes.			Wash eyes with cold water or boric acid solution. Do not bandage. Face wind. Use thin sodium chloride solution.	Makes eyes smart. Short tightly. Tears flow. Temporary.
STIMULATORS	BROMBENZYL CYANIDE <chem>C6H5CH2-CN</chem>	GAS	 Saw dust	Several days. (Weeks in water.)			Wash eyes with boric acid. Do not bandage.	Eyes smart, shut, tears flow. Effect lasts same time. Headache.
	ADAMSITE <small>DIPHENYLAMINE DIBROMIDE</small> <chem>(C6H5)2N-Br</chem>	GAS	 Gas, fumes	10 minutes			Keep quiet and warm. Loosen clothing. Breathe. Spray nose with sea symphoric or salt bathing powder. Aspirate for headache.	Causes sneezing, wet depressed feeling, headache.
	DIPHENYL CHLORARSINE <chem>(C6H5)2AsCl</chem>	SMOKE	 See Pt. 13	Summer 10 minutes			Breath to pure air, keep quiet. Wash from breathing powder bottle.	Causes sick feeling and headache.

# WAR GASES

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## ***General Notes.***

War "Gases," or chemical agents used to produce casualties, are surprise weapons. As this is written, they have not been used against the British or others trained to protect themselves. They have been used against the Ethiopians and the Chinese.

A gas-tight room suitably located offers fair protection against any probable concentration of war gas in a city. For those whose duties take them into the streets a gas mask offers full protection against all but the "blister gases" (liquid vesicants). To enter areas where mustard or lewisite is present, full protective clothing is needed.

War gases may be dropped in bombs or simple containers and liquid vesicants may also be sprayed by airplanes.

The gas warning is a "percussion sound"—that is, bells, drums, hand rattles, rapidly struck resonant objects of any kind. If the presence of gas is suspected, report to the nearest warden. Do not shout if distant gas alarms are heard. The danger is local and the spreading of an alarm must be left to the wardens.

The notes on the following pages are simply for reference for those who have received instruction in protection against gas. Reading them will not by itself make you an expert in gas defense.



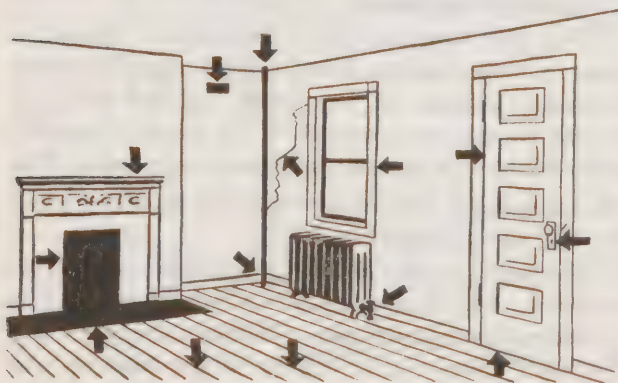
# THE GAS-TIGHT ROOM

War gases hug the ground, flow into cellars and basements. Upper floors of a dwelling are away from dangerous concentrations. If all openings and cracks are closed, a room three stories from the ground will offer good protection against war gases.

To stop cracks and small openings, tape of various kinds may be used. A mush made by soaking newspapers in water or patching plaster may be used for caulking larger openings. A piece of wall board, nails and caulking material may be kept handy to cover a window broken by the blast of high explosives.

One door may be used as an entrance by fastening over it a blanket in such a way as to seal it tightly when no one is going in or out. If soaked in oil to close the air spaces, the blanket is more effective.

Store necessary supplies in such a room—food, water, chairs, a battery-operated radio, flashlight and by all means provide some sort of toilet facilities—use it as the refuge room.



Allow 20 square feet of floor space for each person who is to occupy an average room with a ceiling nine feet high. This will give enough air to occupy the room 10 hours.

The illustration shows where to stop up cracks, how to hang the blanket at the entrance door.

### ***“Blister Gases” and Decontamination.***

Lewisite and mustard “gas” are liquids in the normal state. They give off a dangerous vapor that acts as a war gas and unless chemically neutralized may persist for a week, contaminating the air for a considerable distance down wind.

Full protection against these chemical agents is afforded by gas-proof clothing, covering the wearer from top to toe and tightened at wrists and ankles. The greatest care must be used in undressing after exposure to lewisite or mustard and this is done at personnel decontamination stations, where vesicant casualties are also taken for first aid.

Decontamination of streets, walls, and buildings is effected principally by means of chloride of lime (bleaching powder) freshly mixed with earth and water as a slurry or paste. It must be thoroughly worked into cracks and crevices and the resulting product flushed away. This work is done by the decontamination squads.

The liquid vesicants are very penetrating and ordinary shoes or clothing offer no protection. Do not go into the streets after a gas alarm has been sounded except on direction of the Warden.



RANK DESIGNATION	▲	▲▲	▲▲▲	▲▲▲▲	△	△△	△△△	★	★★	★★★	★★★★	★★★★★
AIR RAID WARDEN	FIRST CLASS	SENIOR OR SECTOR WARDEN	ZONE LEADER	GROUP LEADER	CHIEF WARDEN	STATE WARDEN	NO OTHER RANKS					
AUXILIARY FIREMEN	"	SQUAD LEADER	PLATOON LEADER	COMPANY LEADER	FIRE CHIEF	STATE FIRE COORDINATOR	NO OTHER RANKS					
AUXILIARY POLICEMEN	"	"	"	"	CHIEF OF POLICE	NO OTHER RANKS						
BOMB SQUADS	"	"	NONE	"	"	NO OTHER RANKS						
RESCUE SQUADS	"	"	DEPOT LEADER	"	FIRE CHIEF	NO OTHER RANKS						
MEDICAL FIELD UNITS	"	TEAM LEADER	SQUAD LEADER	UNIT LEADER	CHIEF OF E M S	STATE MEDICAL DIRECTOR	NO OTHER RANKS					
MEDICAL AUXILIARIES (stretcher teams)	"	"	"	NO OTHER RANKS								
NURSES' AIDES												
EMERGENCY FOOD AND HOUSING	FIRST CLASS	UNIT LEADER	DEPOT LEADER	COMPANY LEADER	CHIEF WARDEN	NO OTHER RANKS						
DRIVERS UNITS	"	CONVOY LEADER	"	"	NO OTHER RANKS							
MESSENGERS	"	SENIOR MESSENGER	PLATOON LEADER	"	NO OTHER RANKS							
ROAD REPAIR CREWS	"	CREW LEADER	DEPOT LEADER	"								
DEMOLITION AND CLEAR.	"	"	"	"	CHIEF OF EMER. WORK S.	NO OTHER RANKS						
DECONTAMINATION SQUADS	"	SQUAD LEADER	STATION LEADER	"								
FIRE WATCHERS	"	NO OTHER RANKS										
REPAIR CREWS	"	CREW LEADER	SERVICE LEADER	NONE	CHIEF OF UTILITIES	NO OTHER RANKS						
LOCAL STAFF	"	AS REQUIRED			CONTROLLER	COMMANDER	COORDINATOR	NO OTHER RANKS				
STATE STAFF	"	AS REQUIRED			AS DESIGNATED	AS DESIGNATED	COORDINATOR	COORDINATOR	NO OTHER RANKS			
U. S. STAFF	"	AS REQUIRED				AS DESIGNATED	AS DESIGNATED	AS DESIGNATED	REGION DIRECTOR PRINCIPAL ASSO'S	U. S. DIRECTOR		
EQUIVALENT ARMY TERM	PVT 1st CLASS	NON-COMM OFF	LIEUTENANT	CAPTAIN	MAJOR	COLONEL	BRIG GEN.	MAJ GEN.	LIEUT. GEN.	GENERAL		

# CITIZENS' DEFENSE CORPS

The team of trained civilian services organized to operate the passive defense is known as the Citizens' Defense Corps. It includes regular forces of the city—police, firemen, welfare workers, sanitation men—as well as volunteers. It operates as a unit under the local Defense Coordinator.

## *Staff.*

The Citizens' Defense Corps is headed by a Commander assisted by a staff. His second in command is the Executive Officer. There are others who operate the control center and the communications, account for personnel and property and assign transportation. The Chiefs of the Fire and Police Departments assist him in the passive defense. There is a Chief Air Raid Warden, a Chief of Emergency Medical Services, and others who control groups of the enrolled volunteers. Learn the organization of the Citizens' Defense Corps in your community.

## ***Enrolled Volunteer Services of The Citizens' Defense Corps.***



Air Raid Wardens are in complete charge of a sector containing the homes of about 500 people. To them the warden is the embodiment of all Civilian Defense.



Auxiliary Firemen assist the regular fire-fighting forces.



Auxiliary Policemen assist the police department in enforcing blackout restrictions, in traffic control, and in guard duties.



**Bomb Squads** are specially trained squads of police to handle and dispose of time bombs and duds.



**Rescue Squads** are trained crews of about 10 men each with special equipment to rescue the injured from debris.



**Medical Forces** consist of first-aid parties and stretcher squads and personnel at casualty clearing stations. Members of these forces are doctors, trained nurses, and assistants.



**Nurses' Aides** assist nurses. They have special Red Cross Training.



**Emergency Food and Housing Corps** members provide welfare services to the needy and homeless.



**Drivers Units** consist of emergency drivers of vehicles used by the Civilian Defense services.



**Messengers** carry supplies, dispatches, and messages wherever needed.



**Road Repair Crews** restore normal flow of traffic as quickly as possible. Utility repair men work with these crews and with demolition squads.



**Demolition and Clearance Crews** remove rubble, fill bomb craters, and remove unsafe walls or parts of buildings.



**Decontamination squad** members are specially trained to treat clothing and equipment as well as streets and walls contaminated by war gas.



**Fire Watchers** must spot and combat incendiary bombs.

# A MANUAL OF DRILL

*for the*

## CITIZENS' DEFENSE CORPS

*Adapted from the Basic Field Manual of the  
United States Army*

Basic drill is required of a volunteer for award of the insigne. Drill for units of the Citizens' Defense Corps, moreover, is recommended as it helps to coordinate the work of individuals under a single command. The purposes of drill are:

- 1 To enable a leader to move his unit from one place to another in an orderly manner.
- 2 To aid in disciplinary training by instilling habits of precision and response to the leader's orders.
- 3 To provide a means, through ceremonies, of enhancing the morale; develop a spirit of cohesion; and give an interesting spectacle to the public.
- 4 To give leaders practical training in commanding volunteers.

*Drills should be frequent, intensive, and of short duration.*

## ***General.***

A normal squad of volunteers contains 12 men or 12 women, all of one service. It consists of a leader, an assistant leader, and other personnel. As far as practicable, the squad is kept intact. The usual formation of the squad is a single rank or single file. This permits variations in the number of men composing the squad.

## ***To Form the Squad.***

The command is; FALL IN. At the command FALL IN the squad forms in line as shown. Squad leader on the squad's extreme right, assistant leader on the squad's extreme left.

To secure uniformity, the tallest leader is put in charge of the first squad, the second tallest in charge of the second squad, etc. Assistant

**Fig. I—A Squad in Line**



leaders are similarly arranged. Other volunteers are placed according to height beginning with the tallest being placed next to the leader.

On falling in, each man except the one on the left extends his left arm laterally at shoulder height, palm of the hand down, fingers extended and



joined. Each man, except the one on the right, turns his head and eyes to the right and places himself in line so that his right shoulder touches lightly the tips of the fingers of the man on his right. As soon as proper intervals have been obtained, each man comes to attention, drops his arm smartly to his side and turns his head to

Fig. II—A Volunteer at Attention





the front, heels are together, feet forming a right angle; knees are straight without stiffness, hips level and drawn back slightly, body erect and resting equally on hips, chest lifted and arched, shoulders square and falling equally. Arms hang straight down without stiffness with the back of the hands out, fingers held naturally. Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical, eyes straight to the front. The weight of the body rests equally on the heels and the balls of the feet. In assuming the position of attention the heels are brought together smartly and audibly.

(Leaders and assistant leaders will be appointed under authority defined by the Chief of the Service of which the squad forms a part.

### ***To Form at Close Intervals.***

The commands are: At Close Interval, **FALL IN**. At the command **FALL IN**, the volunteers fall in as described above, except that close intervals are obtained by placing the left hands on the hips. In this position the heel of the palm of the hand rests on the hip, the fingers and thumb are extended and joined, and the elbow is in the plane of the body.



**Fig. III—A Volunteer Falling in at Close Interval**

### ***To Aline the Squad.***

If in line, the commands are: Dress Right, DRESS, Ready, Front. At the command DRESS, each man except the one on the left extends his left arm (or if at close interval, places his left hand upon his hip), and all aline themselves to the right. The instructor places himself on the right flank one pace from and in prolongation of the line and facing down the line. From this position he verifies the alinement of the men, ordering individual men to move forward or back as is necessary. Having checked the alinement, he faces to the right in marching and moves three paces forward, halts, faces to the left and commands: Ready, FRONT. At the command FRONT, arms are dropped quietly and smartly to the sides and heads turned to the front.

### ***Rests.***

Being at a halt the commands are: FALL OUT, REST, AT EASE, and PARADE REST.

At the command FALL OUT, volunteers leave the ranks but are required to remain in the immediate vicinity.

At the command REST, one foot is kept in place. Silence and immobility are not required.

At the command AT EASE the right foot is

kept in place. Silence but not immobility is required.

At the command of execution **REST** of Parade **REST**, move the left foot smartly 12 inches to the left of the right foot keeping the legs straight so that the weight of the body rests equally on both feet. At the same time, clasp the hands behind the back, palms to the rear, thumb and fingers of the right hand clasping the left thumb without constraint; preserving silence and immobility.

Being at any of the rests except **FALL OUT**, to resume the position of Attention, the commands are Squad (or other unit being commanded) **ATTENTION**. At the command **ATTENTION** take that position in your squad.

### ***Eyes right (left).***

The commands are: Eyes (Preliminary Command), **RIGHT** (Command of Execution) (**LEFT**) Ready **FRONT!** At the command **RIGHT**, each man turns his head and eyes to the right. At the command **FRONT** the head and eyes are turned to the front.

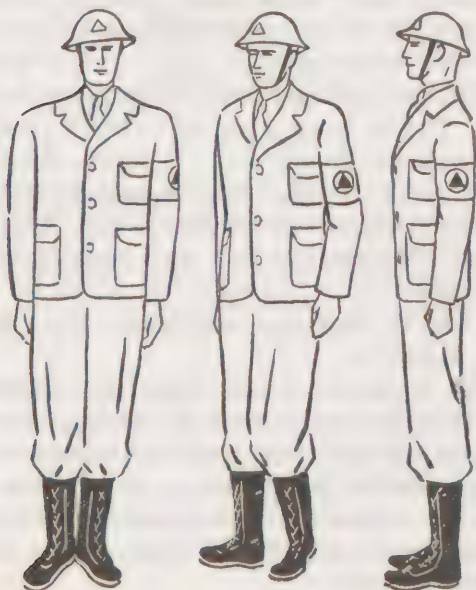
## **Facings.**

*(All Facings are executed at the halt.)*

*To the flank.*—The commands are Right (Left) **FACE**. At the command **FACE**, slightly raise the left heel and the right toe: Face to the right, turning on the right heel, assisted by a slight pressure on the ball of the left foot. Next, place the left foot beside the right. Exercise Left **FACE** on the left heel in a corresponding manner.

*To the rear.*—The commands are: About **FACE**. At the command **FACE**, carry the toe of the right foot a half-foot length to the rear and slightly to the left of the left heel without changing

**Fig. IV—Executing Right FACE**



the position of the left foot; weight of the body mainly on the heel of the left foot; right leg straight without stiffness. (TWO) Face to the rear turning to the right on the left heel and on the ball of the right foot, place the right heel beside the left.

### ***Steps and Marchings.***

All steps and marchings executed from the halt, except right step, begin with the left foot.

**Quick Time:** Being at a halt, to march forward in quick time, the commands are: Forward MARCH. At the command Forward, shift the weight of the body to the right leg without perceptible movement. At the command MARCH, step off smartly with the left foot and continue the march with steps taken straight forward without stiffness or exaggeration of movements. Swing the arms easily in their natural arcs, 6 inches to the front and 3 inches to the rear of the body. To halt when marching in quick time, the commands are: Squad HALT. At the command HALT, given as either foot strikes the ground, execute the halt in two counts by advancing and planting the other foot and then bringing up the foot in rear.

To Mark Time the commands are; Mark-Time, MARCH.

Being in march at the command MARCH, given as either foot strikes the ground, advance and plant the other foot, bring up the foot in rear, placing it so that both heels are on line and continue the cadence by alternately raising and planting each foot. The feet are raised 2 inches from the ground.

Being at a halt, at the command **MARCH**, raise and plant first the left then the right as prescribed above.

The halt is executed from mark time as from quick time.

*Half Step.*—The commands are: **Half Step MARCH**. At the command **MARCH**, take steps of 15 inches in quick time. To resume the full step from the half step or mark time the commands are: **Forward MARCH**.

*Side Step.*—Being at a halt the commands are: **Right (Left) Step MARCH**. At the command **MARCH**, carry the right foot 12 inches to the right, place the left foot beside the right, left knee straight. Continue the cadence of quick time. (The side step is executed in quick time from the halt and for short distances only.)

*Back Step.*—Being at a halt the commands are, **Backward MARCH**. At the command **MARCH**, take steps, beginning with the left foot, 15 inches straight to the rear.

*To March to the Flank.*—Being in march the commands are: **By The Right (Left) Flank—MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) in marching and step off in the new direction.

*Oblique March.*—Being in march the commands are **Right (Left) Oblique—MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) oblique in marching and step off in the new direction.



To resume the original direction, the commands are—Forward, MARCH. At the command MARCH each individual faces half left (right) in marching then moves straight to the front.

*Change Step.*—The commands are Change Step, MARCH. Being in march at quick time, at the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, plant the toe of the right foot near the heel of the left and step off with the left foot. (Execute the change on the right foot similarly, the command MARCH being given as the left foot strikes the ground.)

*To the Rear.*—To face to the rear in marching, being in march, the commands are: To The Rear, MARCH. At the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, turn to the right about on the balls of both feet and immediately step off with the left foot.

*Other Marchings.*—March other than at Attention. The commands are: Route Step, MARCH or At Ease, MARCH. Route Step MARCH, at the command MARCH Volunteers are not required to march at attention or to maintain silence. At Ease, MARCH is the same as Route Step, MARCH, except that Volunteers will maintain silence.

*Dismissing the Squad.*—The unit being at a halt the leader calls the unit to attention, if they are not at attention, from a point six paces in front of the center of the unit. He then will give the command—DISMISSED. Volunteers are then free to go and do as they please until the next regularly scheduled drill period.

## ***Forming the Platoon.***

To form the platoon, which consists of 3 squads—the command, FALL IN will be given by the senior leader facing the area on which he wishes the platoon to form. At this command the unit will form facing the leader with its center 6 paces to his front in 3 parallel lines (each of these lines constitutes a squad). (Should there be insufficient men to form 3 complete squads, skeleton squads of as near equal number as possible will be formed in 3 ranks, squad leaders placing themselves directly behind one another.)

**Fig. V.—A Platoon in Column of Squads**



*From this formation the unit can march; forward, to the right, or to the left.*

## ***Platoon Movements.***

At the command: Forward MARCH, each man steps off with his left foot directly to his own front preserving his relative position and so regulates his step that the ranks remain parallel to his original front.

At the command: Right (Left) FACE Forward MARCH, the unit executes a right face on the heel of the right foot and ball of the left foot at the word FACE and at the word MARCH they step off with their left foot as in moving to the front. (Left face is performed by turning on the heel of the left foot and the ball of the right foot.) In the movements to the right or left the commander of the unit takes a position three paces in front of the left file of his command, at double time if necessary.

Being in a column to change direction the commands are—Column Right (Left) MARCH. At the command MARCH, given as the right (left) foot strikes the ground the first man of the leading element on the right (left) advances one step and then steps off in the new direction using half steps until the men to his left (right) are abreast of him. Full step is then resumed.

*Close Interval—Normal Interval.*—Being in column of threes at normal interval between squads to March or form at Close Interval, the commands are: Close, MARCH. At the command MARCH, the squads close to the center by

obliquing until the interval between men is 4 inches. The center squad take up the half step until the dress has been regained.

If this movement is executed from the halt, the squads close toward the center by executing Right or Left Step until 4-inch intervals are reached.

Being in column of threes at close interval between squads to March or form at Normal Interval, the commands are: Extend, MARCH. At the command MARCH, the squads open to the right and left from the center by obliquing until the normal interval is regained.
























If this movement is executed from the halt, the squads Right or Left Step until normal interval is regained.

*Change Direction.*—Being in column of threes to change direction, the commands are: Column Right (Left) MARCH. The right flank man of the leading rank is the pivot. At the command MARCH, given as the right foot strikes the ground, the right flank man of the leading rank faces to the right in marching and takes up the half step until the other men of his rank are abreast of him, then he resumes the full step. The other men of the leading rank oblique to the right in marching without changing interval, place themselves abreast of the pivot man, and conform to his step. The ranks in rear of the leading rank execute the movement on the same ground and in the same manner as the leading rank.

## **Fig. VI**

### ***Forming the Citizens' Defense Corps for Parade***

(Services will form and move as platoons)

	Mayor, Defense Coordinator and Dignitaries.
	Commander, C. D. C.
	Staff.
	Messengers.
	Drivers.
	Fire Department Chief.
	Auxiliary Firemen.
	Rescue Squads.
	Police Department Chief.
	Auxiliary Police.
	Bomb Squads.
	Colors.
	Warden Service Chief.
	Air Raid Wardens.
	Fire Watchers.
	Emergency Food Housing Units.
	Medical Service Chief.
	Medical Field Units.
	Nurses' Aides Corps.
	Public Works Service Chief.
	Demolition and Clearance Crews.
	Road Repair Squads.
	Decontamination Corps.





*United States*  
**OFFICE OF CIVILIAN DEFENSE**  
*Washington, D. C.*

**PENALTY FOR PRIVATE USE TO AVOID  
PAYMENT OF POSTAGE, \$300**

*A Handbook for*

# ROAD REPAIR CREWS



*United States*

**OFFICE OF CIVILIAN DEFENSE**

*Washington, D. C.*



*A Handbook for*

# ROAD REPAIR CREWS



Prepared by the Training Section

## U. S. OFFICE OF CIVILIAN DEFENSE

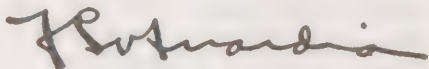


# PREFACE

This is one of a series of civilian defense handbooks prepared by the United States Office of Civilian Defense. The purpose of each handbook is to instruct the individual enrolled civilian defense worker in his duties, and to serve as a manual for reference.

The measures for safeguarding civilians against the effects of air attack, which are described in the following pages, have become a necessary part of the defensive organization of any country open to air attack.

Every State and municipality should take such legal or administrative action as may be necessary to provide for the organization, direction, and training of its Road Repair Crews.



F. H. LaGuardia,  
*U. S. Director Civilian Defense.*

Washington, D. C.  
*December 18, 1941.*



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# ***A Handbook for*** **ROAD REPAIR** **CREWS**



## ***Chain of Command.***

The Public Works Emergency Division Chief, or one having similar authority, usually supervises the Road Repair Crews, the Decontamination Squads, and the Demolition and Clearance Crews. These three services are able to function best within one organization but there are communities where it may be deemed expedient to enroll, train, supervise and equip them separately. Each political subdivision will have its own area to consider, so no hard and fast rule can be laid down. There will be one leader of all Road Repair Crews, under the Public Work's Emergency Division Chief, whose responsibility will embrace all Truck Companies. An Assistant Leader of Road Repair Truck Companies is usually appointed by the Public Works Emergency Division Chief for each area of 100,000 population.

Leaders of Truck Companies are appointed by the Leader of the road repair truck companies. Truck Drivers and Assistant Drivers are appointed by the Truck Company Leader. All Leaders, Drivers and Assistant Drivers are also workers.

## ***Number of Road Repair Crews.***

Road Repair Crews of eight to twelve men are organized for each 4,000 to 5,000 population. Two to four squads are combined to form a Truck Company. These Truck Companies are further organized into groups that serve districts of not more than 100,000. It is not usual that any district will contain more than 100,000 people and no district should be without the services of a proficient Road Repair Truck Company. Each squad is expected to be able to operate alone or in combination with any number of other squads.

Units of the sizes stated above have proven to be the most effective; however, local conditions may make changes necessary.

In small communities the duties of a Road Repair Crew, a Demolition and Clearance Crew and a Rescue Squad may be combined in one Truck Company.

## ***Headquarters for Road Repair Crews.***

Road Repair Crews organized into Truck Companies will be stationed throughout the community at strategic points from which any section can be reached regardless of the extent of raids. They should not be stationed near public buildings or storage tanks.

## ***Duties.***

The duties of Road Repair Crews cover a wide range. Of course the primary duty is to restore the surface to roads in order that traffic can use it, but there are many other things associated with streets and roads that come within the scope of your work.

Medical units, fire-fighting equipment, rescue squads, police cars and workers, have to get through. The roads should be open to traffic at the earliest possible moment. In the meantime plainly marked detours must be laid out. Routes that are narrow and have overhead obstructions should be avoided, as should routes where there are steep grades and sharp turns. Ideal conditions, being seldom obtainable, the best possible road net is laid out and plainly marked.

In any case, the approval of traffic police must be obtained for a detour route before marking.

Restoring road lines, direction signs, pedestrian crossing lines, and painting poles are also part of your responsibility.

Locked or disabled cars found on the roads, that are obstructing traffic, should be removed by any means available.

Animals found wandering on the road should be secured to a tree or post in a manner that makes it impossible for them to block traffic on roads or sidewalks.

Carcasses of animals will be turned over to those experienced in their disposal.

Sewers that are clogged by debris caused by heavy rains will have to be cleared to permit water to run off and traffic to move. There may be occasions when ditches will have to be dug to accomplish this.

High winds may bring down trees that will obstruct roads.

Slides caused by heavy rains or thawing will have to be removed.

Many of these tasks should be performed by Demolition and Clearance Crews and their assistance should be requested through the Control Center when required. However, you should be ever ready to assist in this work and if need be perform it alone.

### ***Training Requirements.***

Each member of a Road Repair Crew is required to be proficient in the following subjects:

1. Fire Defense—3 hours.
2. Gas Defense—2 hours.
3. General Course—5 hours.
4. Drill—2 hours.

### ***Trucks, Cars.***

It is doubtful if there are very many municipalities that can set aside vehicles equipped to be used for air raid work alone. However, dependable vehicles should be made available and reserve quantities of oil and gasoline stored for emergency use.

One member of each Road Repair Crew is the truck driver, another should be designated as substitute driver; each must have a thorough knowledge of the district in which he is to function and also know how to reach surrounding districts and communities.

### ***Equipping the Truck or Car.***

In many cases it will be necessary to obtain road repair equipment by purchase or by loan. This should be stored close to the truck and a supply of fuel and repair parts be made a part of the service load.

### *Suggested Equipment.*

Shovels.  
Picks.  
Mattocks.  
Axes.  
Crowbars.  
Rope, 2".  
Rope,  $\frac{1}{2}$ ", 500 ft.  
Cable, 1" steel, 200 ft.  
Sledge hammers, 10–12 lb.  
Wheelbarrows.  
Post-hole digger.  
Heavy gloves.  
Crosscut saw, 2-handled.  
Electric cable.  
Lamps 250–500 watts.  
Black paint.  
White paint.  
Brushes 1", 2", 4", 6".  
White show cards up to 2' x 3' for signs.  
Boards up to 2' x 3' x 1" for signs.  
Posts—2 by 4's for signs.  
Nails, to fasten signs on posts and trees.  
Handsaw, rip.  
Handsaw, crosscut.  
Supply of detour signs and other standard signs.

### ***Other Machinery. Tractors, Bulldozers, etc.***

A tractor with a scraping attachment or a bulldozer is almost indispensable for filling craters and should be available to every community. Where the municipality does not possess one, arrangement can be made to rent or borrow one or more from private citizens. The man who is to drive and his substitute are responsible for the tractor or bulldozer being ready when needed.



For fast transportation a truck with a ramp will speed up delivery of slow moving equipment to the scene of an incident. A plentiful supply of gasoline, oil, water, and in cold weather anti-freeze, is imperative both for initial usage and for replenishment.

Dump trucks, when available, can be used to great advantage to haul rubble.

Cities that are able to provide all this equipment will be the exception rather than the rule. It is not anticipated that every community will at once purchase everything that might be needed; however, every attempt should be made to secure a good supply of the simpler tools that will do the job efficiently by substituting hand power for mechanical horsepower.

### ***Duties Preliminary to an Air Attack.***

After your crew and truck company is trained and organized it will be to the advantage of all to practice loading and unloading your equipment. Have a place for every piece, have every piece in the best possible condition. If the amount of equipment your local defense council is able to furnish is very limited, attempt to secure vital items by loan or purchase.

Drivers and assistant drivers are responsible for the condition of their vehicles. Time spent in tuning them up will pay big dividends when the adverse conditions that exist during raids is encountered. Moments devoted to care of vehicles in a warm, dry, and lighted garage may prevent break-downs that take hours to repair on the job.

### ***Delayed-Action Bombs.***

Bombs, other than incendiary, that fall near where your crew is working will be reported to the nearest Air Raid Warden at once. When they fail to explode, if your squad is working within the danger area, work will be stopped at once and the crew and equipment withdrawn to a safe distance. Contact should be made with your headquarters to ascertain if there is work elsewhere for your squad.

### ***Tools and Equipment.***

All equipment, from sledge hammers to motor cars, performs best, through long and hard usage, when properly conditioned. During periods of operation and while waiting for calls, no opportunity should be passed up to recondition and tune up equipment. One member of each company should be made responsible for all tools.

As some machinery is equipped with steel wheels, care will be exercised not to let them come in contact with power lines that might be down. Serious and fatal burns and shocks are frequently caused by neglecting this precaution.

### ***After the Raid.***

Air Raid Wardens will inform the control center of damages to roads in his section, the control center will notify the Road Repair Truck Company of their location and extent. If it is within the area assigned to your company you will proceed, with all your vehicles and equipment, to the scene of the incident and take the necessary actions to permit traffic to get through.































Rope off the damaged section with materials from your own truck or with materials that will be supplied by the Warden. Lay out the alternate routes to be used and post as many signs as are necessary to reroute traffic around the area, first checking your arrangements with police authorities. Post guides if necessary. (1,000 lb. bombs will form a crater, in soft earth, 40 ft. across, 6 ft. deep and cause damage to utilities to 10 ft.) Ascertain if any utilities buried under the road have been damaged. If they have been, it will be the responsibility of the chief of public works to say whether it is more important to repair the utilities or to repair the road first. When it is decided to fill in the holes the rubble from the street itself and from buildings that have been destroyed will be used and paving will be replaced.

Cooperation with Demolition and Clearance Crews will lighten the amount of work that will have to be done and shorten the hauls of debris. The usual practice is to demolish walls onto the area formerly occupied by the building. However, when there is a need for materials to fill holes they could be pulled or blown down onto the road where the material can be handled more efficiently.

After alternate routes are marked out and holes are filled in the next step is to restore all signs and lines as were previously in use. When this is finished and caution signs have been placed to warn traffic of the repaired section, the alternate routes will be abandoned, the signs removed and the guides relieved.

## Standard Symbols for Maps.

Use these standard symbols on all maps—they are intended to make clear the facts you and others will need to know in a hurry.

 Warden's Post	 Bomb Crater
 Fire Watcher's Station	 Roped-off Area
 Fire Alarm	 Street Car Tracks
 Telephone	 Double Tracks
 Air Raid Shelter	 Cisterns or Water Reserves
 Gas-Proof Air Raid Shelter	 Sector Limits
 Entrance to Shelter	 Zone Limits
 Fire Station	 Site of Gas Bomb
 Decontamination Squad Depot	 Contaminated Area (For large area, blue cross-hatch)
 Repair Squad	 Street Lamp
 Casualty Station	 Fire Hydrant
 Decontaminating First Aid Station	 Sewer Gratings
 Bomb Squad Station	 Manhole
 Location of Incident (Show number in center)	 Tree
 Demolished Building	 Sandbags

## ***Types of Direction Signs.***



***This Page Is for Notes***

***This Page Is for Notes***



***This Book Belongs to:*** \_\_\_\_\_

\_\_\_\_\_  
(First name)

\_\_\_\_\_  
(Initial)

\_\_\_\_\_  
(Last name)

***Enrolled Status:*** ] \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

***My Home Address Is:*** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

***My Telephone Number Is:*** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

***Or my home can be reached  
by calling*** \_\_\_\_\_  
\_\_\_\_\_

***In case of emergency, notify:*** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

***City*** \_\_\_\_\_ ***State*** \_\_\_\_\_

# BLACKOUTS

Blackouts are ordered only on the authority of the War Department. A blackout may be ordered during any period when hostile forces are believed to be in the vicinity, whether or not enemy airplanes have been sighted.

**"Blacking Out"** a city means that light sources must be so hidden or dimmed that an enemy bomber will have difficulty in finding the target and lack aiming points such as main street intersections. Following are the general plans used.

**Street Lights.** These are fitted with low-watt bulbs and covers that diffuse the light.

**Automobiles.** Headlights must be covered except for a small pair of slits and hooded.

**Traffic Lights.** Are treated the same way as automobile headlights.

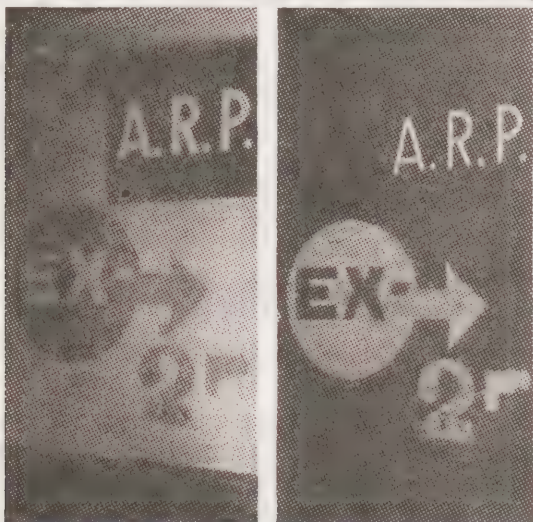
**Buildings.** Windows and doors must be covered with opaque materials. Paint on the glass, heavy curtains, light "baffles" or screens are some of the ways. No cracks of light must show.

**Aids to Seeing.** Since people have to move about during a blackout, the lack of light may be somewhat offset and safety promoted by—



1. Painting curbs, trees, poles and hydrants with white paint. There is a luminous paint, also, that gives off a faint blue light quite visible in total darkness.

2. Painting signs of luminous paint or making them of fluorescent material on which shines ultra-violet or "black" light or installing dimly lighted signs with horizontal screens to diffuse the light.



3. Painting white fenders and stripes around automobiles.

Members of the Citizens' Defense Corps who have outside duties during a blackout can be identified more easily if they wear a white cap or white-painted helmet; also a white belt fitted with crossed straps over the shoulders.



## ***Individual Conduct During a Blackout.***

Observe traffic rules. Keep to the right and remember the man or vehicle approaching *from* your right *has* the right of way.

If you must smoke, go into a hallway or covered place to strike the match. No smoking in the open is an even better rule. Make all crossings at intersections. It is hard for a driver to see you.

Be sure that everyone you know is acquainted with these simple rules.



**DO NOT** run when air raid warnings sound after dark during blackouts.



Use your flashlight as little as possible, if at all. Never point it upward.



Curb edges and direction signs painted white will help you find your way.



Keep pets on leash if you take them out after dark.



If an air raid warning sounds, get under cover, you may be hit by shell fragments.



If you don't know the neighborhood the first policeman or warden will tell you where to go.



When an observer sights a group of hostile planes, he picks up his telephone (1) and says *Army Flash*. The Central Operator (2) at once connects him with the assigned Filter Center (3) to which he reports the type of planes, number, height, and direction of flight. When several reports agree, watchers transmit the data to an Information Center (4) where developments over a large area are plotted on a huge map.

Watching the map, Air Corps officers order interceptor planes into the air, (5) direct them to contact with the enemy; another officer notes the cities threatened and flashes a yellow, blue, or red alarm, according to the degree of danger, to the proper Warning District Center (6).

At this point, Civilian Defense takes over from the Air Corps, telephones the warnings to Control Centers (7) within the Warning District. And here the Commander of the local Citizens' Defense Corps orders the alert, has the public warning sounded usually short blasts on air horns, power horns or steam whistles or on the wailing sirens—and if the bombers arrive overhead, directs the operation of passive defense. Learn the air raid warning for your city.



# FLASH



2



3



5



4

6



7





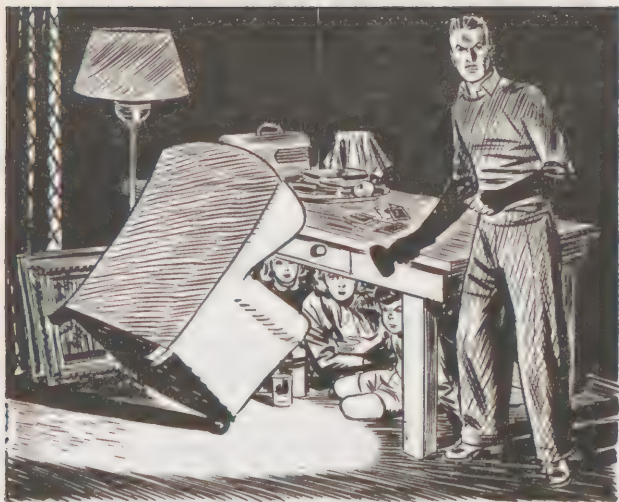


The Refuge Room

## WHAT TO DO IN AN AIR RAID

At the yellow warning, if you are not already on duty, you will be summoned to your post and will carry out orders until relieved. However, here are the rules for those who do not have assigned duties when the air raid warning comes. Memorize them carefully so that you can in turn instruct others. Here is what to tell them:

1. If away from home, seek the nearest shelter. Get off the street.
2. If you are driving, first park your car at the curb; be sure all lights are shut off.
3. If you are at home, send the others to the refuge room. This should be a comfortable place with as little window exposure as possible, equipped with drinking water, things to read, toilet facilities, a flashlight, a portable radio, a sturdy table, and food if you like.
4. Turn off all gas stove burners but leave pilot lights, water heaters and furnaces alone. Leave electricity and water on. Fill some large containers or a bathtub with water.
5. Check up on blackout arrangements. Don't let a crack of light show to the outside.



6. See that everyone's eyeglasses and dentures are in the refuge room. There should be additional warm garments for everyone, too.

7. Keep out of line of windows. Fragments and glass splinters cause most casualties.

8. If bombs fall nearby, get under a heavy table, an overturned davenport.

9. Don't rush out when the "all clear" signal sounds. Maintain the blackout. The Raiders may return.

10. Otherwise, keep cool; be sensible and set an example to others.

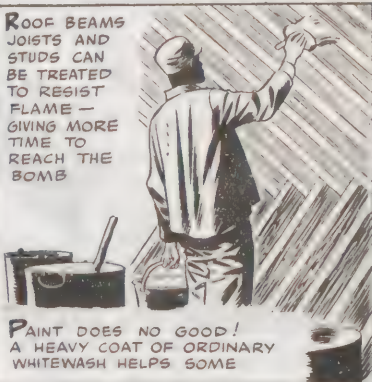
## FIRE DEFENSE

IT WILL BE VERY DIFFICULT TO FIGHT A MAGNESIUM BOMB UNLESS SOME WORK IS DONE BEFORE THE ATTACK



ALL FURNITURE TRUNKS AND JUNK OF ALL KINDS SHOULD BE REMOVED FROM ATTIC OR TOP FLOOR!

ROOF BEAMS JOISTS AND STUDS CAN BE TREATED TO RESIST FLAME — GIVING MORE TIME TO REACH THE BOMB



PAINT DOES NO GOOD! A HEAVY COAT OF ORDINARY WHITEWASH HELPS SOME

# HOW THE MAGNESIUM BOMB WORKS

THE MOST EFFECTIVE  
INCENDIARY BOMB  
MADE SO FAR  
IS THE  
**MAGNESIUM  
BOMB**



LENGTH, ABOUT 14" WEIGHT, 2.2 POUNDS

A LARGE BOMBER  
CAN CARRY 1000  
SUCH BOMBS!



THEY ARE USUALLY RELEASED  
20 TO 50 AT A TIME, SPREAD  
LIKE SHOT BEFORE STRIKING.

DROPPED FROM A HEIGHT OF 20,000  
FEET, THEY DEVELOP ENOUGH FORCE  
TO PENETRATE AN AVERAGE ROOF...



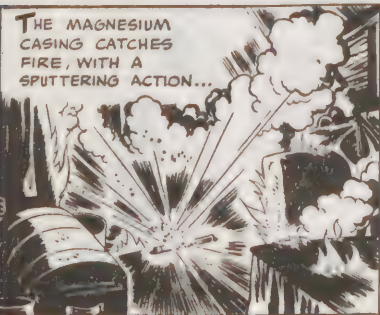
...THUS, THEY USUALLY START BURNING  
IN A TOP STORY OR ATTIC

THE THERMITE FILLING OF  
IRON OXIDE AND FINELY DIVIDED  
ALUMINUM IS THEN IGNITED AND  
DEVELOPS A FIERCE HEAT OF  
**OVER 4500 DEGREES!**



THE FLAME ROARS OUT OF THE  
ESCAPE HOLES.

THE MAGNESIUM  
CASING CATCHES  
FIRE, WITH A  
SPUTTERING ACTION...



...FLAMING MOLTEN METAL IS THROWN  
ABOUT AND SURROUNDING INFLAMMABLE  
MATERIAL CATCHES FIRE

IF NOT QUICKLY  
QUENCHED, THE  
BOMB WILL BURN  
THROUGH THE  
FLOOR, SETTING  
ADDITIONAL  
FIRES ON  
THE FLOOR  
BELOW...



BUT, WITH PROMPT  
ACTION AND SIMPLE  
TOOLS, A MAGNESIUM  
BOMB CAN BE QUENCHED!



# CONTROLLING WITH WATER

TO FIGHT A BOMB WITH WATER, YOU NEED TWO MEN AND SPECIAL EQUIPMENT. REMEMBER, YOU CAN'T PUT OUT THE BOMB — YOU FEED IT WATER, TO BURN OUT!

ONE MAN PUMPS 80 STROKES A MINUTE TO KEEP A STRONG ENOUGH PRESSURE TO THROW A JET 30 FEET, AS SPRAY, 15 FEET. ONE MAN FIGHTS THE FIRE.

YOU USE UP A BUCKET IN 1½ MINUTES

SPECIAL DOUBLE ACTION PUMP WITH 30 FEET OF HOSE AND SPECIAL NOZZLE NEEDED.



SPRAY ON BOMB

A THIRD PERSON IS MOST USEFUL TO CHECK OTHER POINTS FOR FLAME REPLENISH WATER AND RELIEVE PUMPER.

AMPLE STORAGE OF WATER SHOULD BE PROVIDED IN ADVANCE, AS WATER MAINS MAY BE BROKEN BY HIGH EXPLOSIVES AND PRESSURE LOST! FILL THE TUB, EXTRA PAILS AND DON'T FORGET IN A PINCH —

THE CONTENTS OF HOT WATER OR HEATING BOILERS!

NEVER THROW THE CONTENTS OF A WATER PAIL ON A BOMB!

IF CONTROL OF THE BOMB SEEMS DOUBTFUL, HAVE AN ALARM TURNED IN, BUT CONTINUE FIGHTING THE BOMB UNTIL HELP ARRIVES OR SUPPLIES ARE EXHAUSTED!



1 LEARN NOW HOW TO CALL



2 LEARN NOW LOCATION OF NEAREST ALARM...

...IT WILL SCATTER WITH EXPLOSIVE VIOLENCE!

MILTON CAMPF

# CONTROLLING WITH SAND

APPROACH THE BOMB IN A CROUCHING OR CRAWLING POSITION. PLACE THE SAND BUCKET, UPSET, TO ALLOW A FULL-ARM SWING TOWARD THE BOMB



TRY TO COVER THE BOMB WITH DRY SAND, TO CONFINE IT'S ACTION, SO THAT YOU CAN GET NEAR ENOUGH TO SCOOP IT UP ON THE SHOVEL



WHEN THE BOMB IS UNDER FAIR CONTROL, SCOOP IT UP ON THE SHOVEL, FIRST RIGHTING THE BUCKET, BUT LEAVING SOME SAND IN THE BOTTOM...



...IF THE BOMB CAN BE DROPPED FROM A WINDOW TO SOME PLACE WHERE IT CAN BURN OUT WITHOUT HARM —

**GET RID OF IT THAT WAY!**



... OTHERWISE, PUT IT IN THE BUCKET ON TOP OF SAND, COVER IT WITH MORE SAND ...



... THEN, HOLDING THE BUCKET ON THE SHOVEL, CARRY IT OUT OF THE HOUSE ...





## ABOUT FIRE EXTINGUISHERS

Many houses and public buildings have fire extinguishers. They will be as useful as ever in putting out fires caused by an incendiary bomb. For putting out the bomb itself, the extinguisher may not be suitable.

Read the label. If it says that the contents include **CARBON TETRACHLORIDE**, it cannot under any circumstances be used on a magnesium bomb. It is not only ineffective, it may cause dangerous gas to be generated. After the bomb is burnt out, use it on any remaining fire.

All water-type extinguishers are suitable. If the label says **SODA-ACID**, that's simply a means of creating pressure in the extinguisher. Turn it upside down, use it. You can get a spray effect by putting the thumb over the nozzle, use the jet on surrounding fires. However, *one extinguisher is not enough to burn out a magnesium bomb*. And you cannot refill the extinguisher.

It is best to have sand or pump-bucket equipment handy, use them on the bomb, and save the extinguishers for resulting fires.

A foam extinguisher will also help to control a bomb, but one extinguisher load will not finish the job.

See that the extinguishers you know about are ready for use.



## REFERENCE AND TRAINING CHART

The importance of proper first aid for gas victims cannot be overemphasized. The following are general rules which apply in all cases.

- C. Keep the patient at absolute rest; loosen clothing to facilitate breathing.
- D. Remove the patient to a gas-free place as soon as possible.

C. Keep the patient at absolute rest; loosen clothing to facilitate breathing.

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**E. Summon medical aid promptly; if possible, send the victim to a hospital.**




























F. Do not permit the patient to smoke, as this causes coughing and, hence, exertion.

8. Put a gas mask on the patient if gas is still present or, if he has a mask on, check to see that his is properly adjusted. If a mask is not available, wet a handkerchief or other cloth and have him breathe through it.



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	HOSPITAL CASE
	FIRST AID STATION
	LUNG PRO- TECTION NEEDED
	COMPLETE PROTECTION NEEDED

CLASS	NAMES AND SYMBOLS	FORM	ODOR	PERSISTENCE	TACTICAL CLASS	PROTECTION	FIRST AID (After removal from exposed area)	PHYSIOLOGICAL EFFECT
VESICANTS	MUSTARD <small>DI-CHLOROMETHYL SULFIDE</small> $S(CH_2CH_2)_2Cl_2$	LIQUID AND VAPOR	 Bitter, horseradish, mustard	One day to one week. Longer if dry or cold.			Wash: remove liquid mustard with protective ointment, blanch parts, or borax/ascorbic bath; wash eyes and nose with soda solution.	Delayed effect. Burns skin or mucous membranes. Inflammation respiratory tract leading to pneumonia. Eye irritation, conjunctivitis.
	LEWISITE <small>CHLOROBIS (2-CHLOROVINYL) SULFIDE</small> $ClCH_2CH=CH-SO_2Cl$	LIQUID AND VAPOR	 Pungent	One day to one week. Longer if dry or cold.			Wash: remove liquid lewisite with kerosene paraffin, lye or glycerine, or kerosene bath; wash eyes and nose with soda. First—Specter.	Burning or irritation of eyes, nasal passages, respiratory tract, skin. Airs around people.
	CHLOROPICRIN <small>DITHIOBIS (2-CHLOROVINYL) SULFIDE</small> $ClCH_2CH=CH-SO_2Cl$	GAS	 Pungent, acid	Open 1 hour. Wounds 12 hours.			Wash eyes. Keep quiet and warm. Do not use bandages.	Causes severe coughing, crying, vomiting.
	DIPHOSGENE <small>TRICHLOROETHYLENE DICARBONYL CHLORIDE</small> $ClCOOCCl_2$	GAS	 Exchange acid	30 minutes.			Keep quiet and warm. Eyes swollen as a stimulant.	Causes coughing, breathing hurts, eyes water, itchy.
LACRIMATORS	PHOSGENE <small>CARBONYL CHLORIDE</small> $COCl_2$	GAS	 Bitter, acid, even soap	18 to 20 minutes.			Keep quiet and warm. Not rest. Calorie as a stimulant. Loosen clothing for alcohol or cigarettes.	Irritation of lungs, occasional vomiting, hoarseness, eyes closed feeling. Occasionally symptoms delayed. Later collapse, heart failure.
	CLORACETOPHENE $C_{12}H_{15}OCl_2$	GAS	 Apple blossom	10 minutes.			Wash eyes with cold water or borax acid solution. Do not bandage. Face mask. For skin, sodium sulphite solution.	Makes eyes smart. Short lightness. Tears flow. Temporary.
	BROMBENZYL CYANIDE $C_{12}H_9BrN$	GAS	 Sour fruit	Several days. (Wounds in water.)			Wash eyes with boric acid. Do not bandage.	Eyes smart, shut, tears flow. Effect lasts same time. Headache.
	ADAMSITE <small>DIPHENYLAMINE CYANIDE</small> $(C_6H_5)_2N-CN$	GAS	 Gale (sawdust)	10 minutes			Keep quiet and warm. Loosen clothing. Bandage. Spray nose with soap-saline or salt washing powder. Aspirin for headache.	Causes sneezing, such depressed feeling, headache.
STERNUTANTS	DIPHENYLCHLORARSINE $(C_6H_5)_2ClAsH_2$	SMOKE	 Sour fruit	Summer 10 minutes.			Promote to pure air. Keep quiet. Stop breathing powder bottle.	Causes such feeling and headache.

# WAR GASES

---

## ***General Notes.***

War "Gases," or chemical agents used to produce casualties, are surprise weapons. As this is written, they have not been used against the British or others trained to protect themselves. They have been used against the Ethiopians and the Chinese.

A gas-tight room suitably located offers fair protection against any probable concentration of war gas in a city. For those whose duties take them into the streets a gas mask offers full protection against all but the "blister gases" (liquid vesicants). To enter areas where mustard or lewisite is present, full protective clothing is needed.

War gases may be dropped in bombs or simple containers and liquid vesicants may also be sprayed by airplanes.

The gas warning is a "percussion sound"—that is, bells, drums, hand rattles, rapidly struck resonant objects of any kind. If the presence of gas is suspected, report to the nearest warden. Do not shout if distant gas alarms are heard. The danger is local and the spreading of an alarm must be left to the wardens.

The notes on the following pages are simply for reference for those who have received instruction in protection against gas. Reading them will not by itself make you an expert in gas defense.

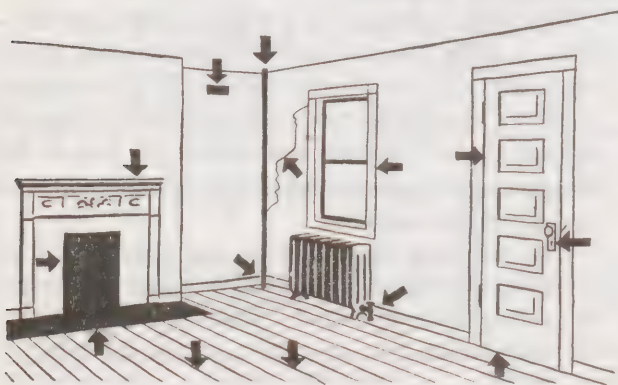
# THE GAS-TIGHT ROOM

War gases hug the ground, flow into cellars and basements. Upper floors of a dwelling are away from dangerous concentrations. If all openings and cracks are closed, a room three stories from the ground will offer good protection against war gases.

To stop cracks and small openings, tape of various kinds may be used. A mush made by soaking newspapers in water or patching plaster may be used for caulking larger openings. A piece of wall board, nails and caulking material may be kept handy to cover a window broken by the blast of high explosives.

One door may be used as an entrance by fastening over it a blanket in such a way as to seal it tightly when no one is going in or out. If soaked in oil to close the air spaces, the blanket is more effective.

Store necessary supplies in such a room—food, water, chairs, a battery-operated radio, flashlight and by all means provide some sort of toilet facilities—use it as the refuge room.



Allow 20 square feet of floor space for each person who is to occupy an average room with a ceiling nine feet high. This will give enough air to occupy the room 10 hours.

The illustration shows where to stop up cracks, how to hang the blanket at the entrance door.

## ***“Blister Gases”***

### ***and Decontamination.***

Lewisite and mustard “gas” are liquids in the normal state. They give off a dangerous vapor that acts as a war gas and unless chemically neutralized may persist for a week, contaminating the air for a considerable distance down wind.

Full protection against these chemical agents is afforded by gas-proof clothing, covering the wearer from top to toe and tightened at wrists and ankles. The greatest care must be used in undressing after exposure to lewisite or mustard and this is done at personnel decontamination stations, where vesicant casualties are also taken for first aid.

Decontamination of streets, walls, and buildings is effected principally by means of chloride of lime (bleaching powder) freshly mixed with earth and water as a slurry or paste. It must be thoroughly worked into cracks and crevices and the resulting product flushed away. This work is done by the decontamination squads.

The liquid vesicants are very penetrating and ordinary shoes or clothing offer no protection. Do not go into the streets after a gas alarm has been sounded except on direction of the Warden.

RANK DESIGNATION	▲	▲▲	▲▲▲	▲▲▲▲	△	△△	△△△	★	★★	★★★	★★★★	★★★★★
AIR RAID WARDEN	FIRST CLASS	SENIOR OR SECTOR WARDEN		ZONE LEADER	GROUP LEADER	CHIEF WARDEN	STATE WARDEN	NO OTHER RANKS				
AUXILIARY FIREMEN	"	SQUAD LEADER		PLATOON LEADER	COMPANY LEADER	FIRE CHIEF	STATE FIRE COORDINATOR	NO OTHER RANKS				
AUXILIARY POLICEMEN	"	"	"	"	"	CHIEF OF POLICE	NO OTHER RANKS					
BOMB SQUADS	"	"	"	NONE	"	"	NO OTHER RANKS					
RESCUE SQUADS	"	"	"	DEPUTY LEADER	"	FIRE CHIEF	NO OTHER RANKS					
MEDICAL FIELD UNITS	"	TEAM LEADER		SQUAD LEADER	UNIT LEADER	CHIEF OF F M S	STATE MEDICAL DIRECTOR	NO OTHER RANKS				
MEDICAL AUXILIARIES (stretcher teams)	"	"	★	"	NO OTHER RANKS							
NURSES' AIDES	NO RANK DESIGNATIONS											
EMERGENCY FOOD AND HOUSING	FIRST CLASS	UNIT LEADER		DEPOT LEADER	COMPANY LEADER	CHIEF WARDEN	NO OTHER RANKS					
DRIVERS UNITS	"	CONVOY LEADER		"	"	NO OTHER RANKS						
MESSENGERS	"	SENIOR MESSENGER		PLATOON LEADER	"	NO OTHER RANKS						
ROAD REPAIR CREWS	"	CREW LEADER		DEPOT LEADER	"							
DEMOLITION AND CLEAR.	"	"	"	"	"	CHIEF OF EMER. WORK S.	NO OTHER RANKS					
DECONTAMINATION SQUADS	"	SQUAD LEADER		SECTION LEADER								
FIRE WATCHERS	"	NO OTHER RANKS										
REPAIR CREWS	"	CREW LEADER		SERVICE LEADER	NONE	CHIEF OF UTILITIES	NO OTHER RANKS					
LOCAL STAFF	"	AS REQUIRED				CONTROLLER	COMMANDER	NO OTHER RANKS				
STATE STAFF	"	AS REQUIRED				AS DESIGNATED	AS DESIGNATED	COORDINATOR	NO OTHER RANKS			
U. S. STAFF	"	AS REQUIRED				AS DESIGNATED	AS DESIGNATED	AS DESIGNATED	REGIONAL DIRECTOR PRINCIPAL ASSTS	U S DIRECTOR		
EQUIVALENT ARMY TERM	BYT 1st CLASS	NON-COMM OFF.	LIEUTENANT	CAPTAIN	MAJOR	COLONEL	LIEUT GEN	MAJ GEN				GENERAL

\*ASSIGNED BY RED CROSS TO CHIEF OF EMERGENCY MEDICAL SERVICE



# CITIZENS' DEFENSE CORPS

The team of trained civilian services organized to operate the passive defense is known as the Citizens' Defense Corps. It includes regular forces of the city—police, firemen, welfare workers, sanitation men—as well as volunteers. It operates as a unit under the local Defense Coordinator.

## *Staff.*

The Citizens' Defense Corps is headed by a Commander assisted by a staff. His second in command is the Executive Officer. There are others who operate the control center and the communications, account for personnel and property and assign transportation. The Chiefs of the Fire and Police Departments assist him in the passive defense. There is a Chief Air Raid Warden, a Chief of Emergency Medical Services, and others who control groups of the enrolled volunteers. Learn the organization of the Citizens' Defense Corps in your community.

## ***Enrolled Volunteer Services of The Citizens' Defense Corps.***



Air Raid Wardens are in complete charge of a sector containing the homes of about 500 people. To them the warden is the embodiment of all Civilian Defense.



Auxiliary Firemen assist the regular fire-fighting forces.



Auxiliary Policemen assist the police department in enforcing blackout restrictions, in traffic control, and in guard duties.





Bomb Squads are specially trained squads of police to handle and dispose of time bombs and duds.



Rescue Squads are trained crews of about 10 men each with special equipment to rescue the injured from debris.



Medical Forces consist of first-aid parties and stretcher squads and personnel at casualty clearing stations. Members of these forces are doctors, trained nurses, and assistants.



Nurses' Aides assist nurses. They have special Red Cross Training.



Emergency Food and Housing Corps members provide welfare services to the needy and homeless.



Drivers Units consist of emergency drivers of vehicles used by the Civilian Defense services.



Messengers carry supplies, dispatches, and messages wherever needed.



Road Repair Crews restore normal flow of traffic as quickly as possible. Utility repair men work with these crews and with demolition squads.



Demolition and Clearance Crews remove rubble, fill bomb craters, and remove unsafe walls or parts of buildings.



Decontamination squad members are specially trained to treat clothing and equipment as well as streets and walls contaminated by war gas.



Fire Watchers must spot and combat incendiary bombs.

# A MANUAL OF DRILL

*for the*

## CITIZENS' DEFENSE CORPS

*Adapted from the Basic Field Manual of the  
United States Army*

Basic drill is required of a volunteer for award of the insigne. Drill for units of the Citizens' Defense Corps, moreover, is recommended as it helps to coordinate the work of individuals under a single command. The purposes of drill are:

- 1 To enable a leader to move his unit from one place to another in an orderly manner.
- 2 To aid in disciplinary training by instilling habits of precision and response to the leader's orders.
- 3 To provide a means, through ceremonies, of enhancing the morale; develop a spirit of cohesion; and give an interesting spectacle to the public.
- 4 To give leaders practical training in commanding volunteers.

*Drills should be frequent, intensive, and of short duration.*

## ***General.***

A normal squad of volunteers contains 12 men or 12 women, all of one service. It consists of a leader, an assistant leader, and other personnel. As far as practicable, the squad is kept intact. The usual formation of the squad is a single rank or single file. This permits variations in the number of men composing the squad.

## ***To Form the Squad.***

The command is; **FALL IN.** At the command **FALL IN** the squad forms in line as shown. Squad leader on the squad's extreme right, assistant leader on the squad's extreme left.

To secure uniformity, the tallest leader is put in charge of the first squad, the second tallest in charge of the second squad, etc. Assistant

**Fig. I—A Squad in Line**



leaders are similarly arranged. Other volunteers are placed according to height beginning with the tallest being placed next to the leader.

On falling in, each man except the one on the left extends his left arm laterally at shoulder height, palm of the hand down, fingers extended and

joined. Each man, except the one on the right, turns his head and eyes to the right and places himself in line so that his right shoulder touches lightly the tips of the fingers of the man on his right. As soon as proper intervals have been obtained, each man comes to attention, drops his arm smartly to his side and turns his head to

**Fig. II—A Volunteer at Attention**



the front, heels are together, feet forming a right angle; knees are straight without stiffness, hips level and drawn back slightly, body erect and resting equally on hips, chest lifted and arched, shoulders square and falling equally. Arms hang straight down without stiffness with the back of the hands out, fingers held naturally. Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical, eyes straight to the front. The weight of the body rests equally on the heels and the balls of the feet. In assuming the position of attention the heels are brought together smartly and audibly.

(Leaders and assistant leaders will be appointed under authority defined by the Chief of the Service of which the squad forms a part.

### ***To Form at Close Intervals.***

The commands are: At Close Interval, **FALL IN**. At the command **FALL IN**, the volunteers fall in as described above, except that close intervals are obtained by placing the left hands on the hips. In this position the heel of the palm of the hand rests on the hip, the fingers and thumb are extended and joined, and the elbow is in the plane of the body.



**Fig. III—A Volunteer Falling in at Close Interval**

## ***To Aline the Squad.***

If in line, the commands are: Dress Right, DRESS, Ready, Front. At the command DRESS, each man except the one on the left extends his left arm (or if at close interval, places his left hand upon his hip), and all aline themselves to the right. The instructor places himself on the right flank one pace from and in prolongation of the line and facing down the line. From this position he verifies the alinement of the men, ordering individual men to move forward or back as is necessary. Having checked the alinement, he faces to the right in marching and moves three paces forward, halts, faces to the left and commands: Ready, FRONT. At the command FRONT, arms are dropped quietly and smartly to the sides and heads turned to the front.

## ***Rests.***

Being at a halt the commands are: FALL OUT, REST, AT EASE, and PARADE REST.

At the command FALL OUT, volunteers leave the ranks but are required to remain in the immediate vicinity.

At the command REST, one foot is kept in place. Silence and immobility are not required.

At the command AT EASE the right foot is



kept in place. Silence but not immobility is required.

At the command of execution **REST** of Parade **REST**, move the left foot smartly 12 inches to the left of the right foot keeping the legs straight so that the weight of the body rests equally on both feet. At the same time, clasp the hands behind the back, palms to the rear, thumb and fingers of the right hand clasping the left thumb without constraint; preserving silence and immobility.

Being at any of the rests except **FALL OUT**, to resume the position of Attention, the commands are Squad (or other unit being commanded) **ATTENTION**. At the command **ATTENTION** take that position in your squad.

### ***Eyes right (left).***

The commands are: Eyes (Preliminary Command), **RIGHT** (Command of Execution) (**LEFT**) Ready **FRONT!** At the command **RIGHT**, each man turns his head and eyes to the right. At the command **FRONT** the head and eyes are turned to the front.

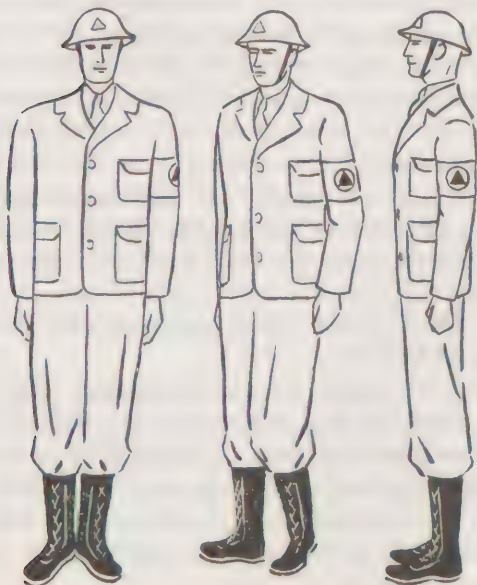
## **Facings.**

*(All Facings are executed at the halt.)*

*To the flank.*—The commands are Right (Left) FACE. At the command FACE, slightly raise the left heel and the right toe: Face to the right, turning on the right heel, assisted by a slight pressure on the ball of the left foot. Next, place the left foot beside the right. Exercise Left FACE on the left heel in a corresponding manner.

*To the rear.*—The commands are: About FACE. At the command FACE, carry the toe of the right foot a half-foot length to the rear and slightly to the left of the left heel without changing

**Fig. IV—Executing Right FACE**



the position of the left foot; weight of the body mainly on the heel of the left foot; right leg straight without stiffness. (TWO) Face to the rear turning to the right on the left heel and on the ball of the right foot, place the right heel beside the left.

### ***Steps and Marchings.***

All steps and marchings executed from the halt, except right step, begin with the left foot.

**Quick Time:** Being at a halt, to march forward in quick time, the commands are: Forward MARCH. At the command Forward, shift the weight of the body to the right leg without perceptible movement. At the command MARCH, step off smartly with the left foot and continue the march with steps taken straight forward without stiffness or exaggeration of movements. Swing the arms easily in their natural arcs, 6 inches to the front and 3 inches to the rear of the body. To halt when marching in quick time, the commands are: Squad HALT. At the command HALT, given as either foot strikes the ground, execute the halt in two counts by advancing and planting the other foot and then bringing up the foot in rear.

To Mark Time the commands are; Mark-Time, MARCH.

Being in march at the command MARCH, given as either foot strikes the ground, advance and plant the other foot, bring up the foot in rear, placing it so that both heels are on line and continue the cadence by alternately raising and planting each foot. The feet are raised 2 inches from the ground.

Being at a halt, at the command **MARCH**, raise and plant first the left then the right as prescribed above.

The halt is executed from mark time as from quick time.

*Half Step.*—The commands are: **Half Step MARCH**. At the command **MARCH**, take steps of 15 inches in quick time. To resume the full step from the half step or mark time the commands are: **Forward MARCH**.

*Side Step.*—Being at a halt the commands are: **Right (Left) Step MARCH**. At the command **MARCH**, carry the right foot 12 inches to the right, place the left foot beside the right, left knee straight. Continue the cadence of quick time. (The side step is executed in quick time from the halt and for short distances only.)

*Back Step.*—Being at a halt the commands are, **Backward MARCH**. At the command **MARCH**, take steps, beginning with the left foot, 15 inches straight to the rear.

*To March to the Flank.*—Being in march the commands are: **By The Right (Left) Flank—MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) in marching and step off in the new direction.

*Oblique March.*—Being in march the commands are **Right (Left) Oblique—MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) oblique in marching and step off in the new direction.

To resume the original direction, the commands are—Forward, MARCH. At the command MARCH each individual faces half left (right) in marching then moves straight to the front.

*Change Step.*—The commands are Change Step, MARCH. Being in march at quick time, at the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, plant the toe of the right foot near the heel of the left and step off with the left foot. (Execute the change on the right foot similarly, the command MARCH being given as the left foot strikes the ground.)

*To the Rear.*—To face to the rear in marching, being in march, the commands are: To The Rear, MARCH. At the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, turn to the right about on the balls of both feet and immediately step off with the left foot.

*Other Marchings.*—March other than at Attention. The commands are: Route Step, MARCH or At Ease, MARCH. Route Step MARCH, at the command MARCH Volunteers are not required to march at attention or to maintain silence. At Ease, MARCH is the same as Route Step, MARCH, except that Volunteers will maintain silence.

*Dismissing the Squad.*—The unit being at a halt the leader calls the unit to attention, if they are not at attention, from a point six paces in front of the center of the unit. He then will give the command—DISMISSED. Volunteers are then free to go and do as they please until the next regularly scheduled drill period.

## ***Forming the Platoon.***

To form the platoon, which consists of 3 squads—the command, FALL IN will be given by the senior leader facing the area on which he wishes the platoon to form. At this command the unit will form facing the leader with its center 6 paces to his front in 3 parallel lines (each of these lines constitutes a squad). (Should there be insufficient men to form 3 complete squads, skeleton squads of as near equal number as possible will be formed in 3 ranks, squad leaders placing themselves directly behind one another.)

**Fig. V.—A Platoon in Column of Squads**



*From this formation the unit can march; forward, to the right, or to the left.*



## ***Platoon Movements.***

At the command: Forward MARCH, each man steps off with his left foot directly to his own front preserving his relative position and so regulates his step that the ranks remain parallel to his original front.

At the command: Right (Left) FACE Forward MARCH, the unit executes a right face on the heel of the right foot and ball of the left foot at the word FACE and at the word MARCH they step off with their left foot as in moving to the front. (Left face is performed by turning on the heel of the left foot and the ball of the right foot.) In the movements to the right or left the commander of the unit takes a position three paces in front of the left file of his command, at double time if necessary.

Being in a column to change direction the commands are—Column Right (Left) MARCH. At the command MARCH, given as the right (left) foot strikes the ground the first man of the leading element on the right (left) advances one step and then steps off in the new direction using half steps until the men to his left (right) are abreast of him. Full step is then resumed.

*Close Interval—Normal Interval.*—Being in column of threes at normal interval between squads to March or form at Close Interval, the commands are: Close, MARCH. At the command MARCH, the squads close to the center by

obliquing until the interval between men is 4 inches. The center squad take up the half step until the dress has been regained.

If this movement is executed from the halt, the squads close toward the center by executing Right or Left Step until 4-inch intervals are reached.

Being in column of threes at close interval between squads to March or form at Normal Interval, the commands are: Extend, MARCH. At the command MARCH, the squads open to the right and left from the center by obliquing until the normal interval is regained.
























If this movement is executed from the halt, the squads Right or Left Step until normal interval is regained.

*Change Direction.*—Being in column of threes to change direction, the commands are: Column Right (Left) MARCH. The right flank man of the leading rank is the pivot. At the command MARCH, given as the right foot strikes the ground, the right flank man of the leading rank faces to the right in marching and takes up the half step until the other men of his rank are abreast of him, then he resumes the full step. The other men of the leading rank oblique to the right in marching without changing interval, place themselves abreast of the pivot man, and conform to his step. The ranks in rear of the leading rank execute the movement on the same ground and in the same manner as the leading rank

## **Fig. VI**

### ***Forming the Citizens' Defense Corps for Parade***

(Services will form and move as platoons)

	Mayor, Defense Coordinator and Dignitaries.
	Commander, C. D. C.
	Staff.
	Messengers.
	Drivers.
	Fire Department Chief.
	Auxiliary Firemen.
	Rescue Squads.
	Police Department Chief.
	Auxiliary Police.
	Bomb Squads.
	Colors.
	Warden Service Chief.
	Air Raid Wardens.
	Fire Watchers.
	Emergency Food Housing Units.
	Medical Service Chief.
	Medical Field Units.
	Nurses' Aides Corps.
	Public Works Service Chief.
	Demolition and Clearance Crews.
	Road Repair Squads.
	Decontamination Corps.





**OFFICE OF CIVILIAN DEFENSE**  
**WASHINGTON, D. C.**

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PAYMENT OF POSTAGE, \$300**

*A Handbook for*  
**RESCUE SQUADS**



*United States*  
**OFFICE OF CIVILIAN DEFENSE**  
*Washington, D. C.*





*A Handbook for*

# RESCUE SQUADS



Prepared by Training Section

**U. S. OFFICE OF CIVILIAN DEFENSE**

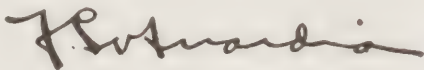
U. S. Government Printing Office, December 1941, Washington, D. C.

# PREFACE

This is one of a series of civilian defense handbooks prepared by the United States Office of Civilian Defense. The purpose of each handbook is to instruct the individual enrolled civilian defense worker in his duties and to serve as a manual for reference.

The measures for safeguarding civilians against the effects of air attack, which are described in the following pages, have become a necessary part of the defensive organization of any country open to air attack.

Every State and municipality should take such legal or administrative action as may be necessary to provide for the organization, direction, and training of its Rescue Service.

A handwritten signature in dark ink, appearing to read 'F. H. LaGuardia', with a stylized, flowing script.

F. H. LaGuardia,  
*U. S. Director Civilian Defense.*

Washington, D. C.  
*December 1941.*

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***In Regard to the***

# RESCUE SERVICE

War from the air and widespread bombing of civilian populations brings with it the problem of extricating persons trapped under debris. Such people, though trapped, may be unharmed except for nervous shock; they may be casualties; or they may be dead. It is the primary duty of the Rescue Squad to save them—the dead as well as the living when it can be done without further risk to life.

In performing this work the Rescue Party may be concerned with:

First Aid.

Incendiary-Bomb Control.

Decontamination.

Urgent Shoring and Demolition.

Utilities—Gas and Water Mains.

In London, where the effect of raiding has tested the rescue squads more severely than any other service, with the possible exception of the fire departments, it has been found that rescue work, in addition to being long, dangerous, and hard, must be performed with *speed* and *care*.

***Speed.***—Because so long as there is the slightest possibility that a trapped victim is alive, no effort must be spared to accelerate his rescue.

***Care.***—Because lack of proper precautions may cause landslides, falling debris, or shift of debris in such manner as to kill those trapped.



*Steady and continued work* also is necessary. It may frequently be from 4 days to a week or even more before all the bodies have been found after an extensive raid. It is not unusual that tunneling and burrowing proceed for 24 hours before the trapped victim is reached.

Such work requires persistence, but every member of a Rescue Squad knows that—

**THERE IS TRIUMPH IN HIS STUBBORN  
DIGGING !**



## **Chain of Command.**

The immediate superior of the Leader of a Rescue Squad is known as the Chief of Rescue Service. He has the following duties to perform:

**Administrative.**—Including enrollment, discipline, maintenance, organization, and efficiency of the men for that part of the Rescue Service of which he is in charge.

**Training.**—Including preparation, execution, and general supervision of a program of training in rescue work for those men over whom he is in charge.

**Operational.**—Including activities of Rescue Squad personnel during air raids.

The Chief of Rescue Service or one of his assistants will direct the Leader in accordance with these three basic duties. The Leader, in turn, will direct the Rescue Squad in accordance with the orders of the Chief of Rescue Service. The Leader has a high sense of responsibility to the Chief of Rescue Service on the one hand and to members of the Rescue Squad on the other.

**The Rescue Squad.**—The Rescue Squad of which the Leader is in charge will consist of 10 men and a driver. If possible, the 10 men should be proportioned as follows:

1. Former coal or hard-rock miner (if possible, one trained in rescue work by the Bureau of Mines).
2. House wrecker.
3. Scaffolder.
4. Structural-steel erector.
5. Plumber.
6. Electrician.

7. Handyman.
8. Handyman.
9. Helper.
10. Helper.

Since a new problem will confront the Rescue Squad each time it operates, it is probable that rescue procedure will not be exactly the same in any two cases. Therefore, in choosing personnel, emphasis must be placed on inherent capacity and resourcefulness. Every effort must be made to obtain men skilled in handling mechanized equipment and familiar with house-wrecking work. Providing some of the Rescue Squad personnel are so qualified, then the primary need is for *unskilled* assistance—men who have the physical endurance and the will to perform the arduous duties which rescue work involves—men who have physical qualifications which permit heavy and hard work for long hours, possibly under the encumbrance of a gas mask or an oxygen-breathing apparatus, or in an atmosphere low in oxygen or containing varying amounts of combustible or toxic gases. About 25,000 men in various parts of the country have been trained by the United States Bureau of Mines in mine-rescue work. Wherever possible, the services of such trained personnel should be enlisted in organization of the Rescue Service for civil protection.

**The Leader.**—The Leader of a Rescue Squad holds a position of special responsibility and trust, demanding exceptional qualities of reliability and perseverance. Perseverance, beginning with the Leader and emanating to all members of the Squad, will overcome the set-backs, difficulties,

and long hours of seemingly useless "digging" into tons of rubble and debris which usually precede the rescue of those buried alive.

Since human lives are at stake, the Leader of the Rescue Squad must never fail in his responsibility. As *he* is reliable, so will his men be. To this end, he must be methodical, make thoughtful preparation for his work, carry it out in orderly sequence, and keep a careful record of what is done. Above all, he must be clear in his own mind as to what he wants done, how he wants it done, and why he wants it done.

***The Driver.***—The Leader of a Rescue Squad should understand the relationship of the Driver to the Chief of Rescue Service. The Driver is responsible to the Chief for the condition and running of the Rescue Squad truck and its readiness to take the road at any time during the night or day. Immediately after he has reported for duty the incoming Driver should satisfy himself by personal inspection that the vehicle is in good running order. Any loss, damage, defect, or repair, or adjustment of major importance, both of the vehicle and of tools, should be reported to the Chief of Rescue Service for such further action as may be necessary.

***The Rescue Squad Depot.***—Rescue Squads are organized in depots which house members of the squad and their transport. On the average, only one Rescue Squad will be housed in each Depot and there will be one Depot for every 25,000 people. The place selected as a depot should be protected against air raids as much as possible.

**Training.**—Instruction in special duties of Rescue Squads will be given at the Rescue Squad Depots where lectures, training, and practice in this connection will be carried out.

### **Rescue Squad**

## **EQUIPMENT**

Rescue work is usually carried on under the direction of the Fire Department, and the basis of the equipment in each instance will be whatever the individual department can supply. A list of equipment, comprehensive and reasonably adequate for most emergencies, is authorized for each Rescue Squad with the aim that it shall be met as nearly as possible by each group.

Some incidents of a major character will necessitate swift removal of massive lumps of brickwork and masonry, dragging away of masses of tangled trusses, girders, and other debris, rapid cutting up of portions of reinforced concrete and their removal to facilitate rescue and generally to make access. For this purpose it is desirable that the Chief of Rescue Service should contact the contractors, works managers, filling-station operators, and garages in their area and compile a record of such heavy equipment as lifting gear, portable derricks, winches, gasoline-driven equipment, mechanical excavators, lengths of heavy chain, and other heavy gear which might be useful in an emergency.

**Care of Equipment.**—Rescue Squads are expected to look after their equipment, to keep it

clean and in working order, to watch for wear, tear, and defects, and to report them at once and to account for any loss.

Each Squad should be in possession of a list of the equipment with which it has been furnished, and it is recommended that this list be mounted on a board and kept on the truck. The list should be produced and used as a basis for checking the equipment at each change of shift, at equipment inspections and after incidents.

The whole Squad is responsible for the equipment in the truck, but where the Squad is in action at an exercise or an incident, the Driver, by reason of his duty to stand by the truck, should act as the Squad's storekeeper at such times, and check each item of equipment returned to the truck against that issued. The importance of such a careful check cannot be emphasized too greatly. Equipment is costly and replaced with difficulty. Since additional air raids may occur before a lost item can be replaced, it is important that each Squad member feel a personal responsibility for seeing that items of equipment are returned to the Driver.

**Trucks.**—Type: Rescue Squads are equipped with open and covered trucks. Each has particular advantages and disadvantages related to the uses to which it may be put, and for this reason, wherever possible both types should be on hand at each depot.

The covered truck offers best protection to the contents and the greater area of interior surface lends itself readily to the storage of articles of equipment. A truck with a canvas top is especially desirable. The open truck can be used for



removing and for carrying debris or special equipment. However, in this case, it must be fitted up in a manner that enables it to be unloaded easily and the floor to be cleared completely and quickly.

**Planning the Truck Unit.**—Much technical skill is needed in planning an efficient system of storage in a truck. Principal rules are:

1. Provide a clear floor space. It is wrong and unnecessary for men to have to stand on their equipment when manning the truck.

2. Group the equipment. One of the most difficult items to store is the protective clothing, and the planning of this is often the key to the planning of the rest of the equipment.

3. Let instant accessibility of each item form the basis of the detailed planning.

*Caution:* Heavy items must be adequately secured or rested on the floor of the truck. Serious accidents have occurred to the personnel when jacks, for example, have become unfastened during a journey.

**The Trailer.**—The primary object of a trailer is to provide a means of carrying equipment to places where it may be impossible or undesirable to take the truck.

**List of Equipment.**—Following is a schedule of equipment authorized for a Rescue Squad of 10:

Personal Equipment, per man (Recommended):

- 1 Steel helmet.

- 1 Civilian duty gas mask (when available).

- 1 Heavy water-resistant suit of jacket and trousers.

- 1 Pair (leather) heavy work gloves.

- 1 Pair canvas work gloves.
- 1 Pair rubber boots.
- 1 Pair heavy leather lace boots.
- 1 Waterproof coat.

Rescue Equipment, per squad (Recommended):

- A supply of timber.
- 3 20-ft. scaffold poles.
- 2 Iron-shod levers (10 ft. or 12 ft.).
- 2 Small acetylene lamps; a tin of carbide; a can of water.
- 1 Heavy axe.
- 6 Firemen's axes.
- 1 Set of rope tackle (a 3-sheave, a 2-sheave, and a 100-ft. 3-in. rope).
- 1 200-ft. length Manila or Sisal rope (3 in.).
- 7 40-ft. lengths  $1\frac{1}{2}$ -in. Manila lashing lines (including one for stretcher sling)
- 1 100-ft. length  $\frac{5}{8}$ -in. wire rope with thimbles and shackle.
- 2 50-ft. lengths  $\frac{5}{8}$ -in. wire rope with thimbles and shackle.
- 1 chain lifting tackle.
- 1 6-ft. chain (3-ton lift).
- 1 6-ft. chain (2-ton lift).
- 2 6-ft. chains ( $1\frac{1}{2}$ -ton lift).
- 1 Single sheave snatch block.
- 1 Pulley wheel and basket sling.
- 1 Set of chain tackle.
- 2 Jacks with 10- or 15-ton lift.
- 1 35-ft. ladder (extension).
- 10 Small electric hand lamps.
- 4 Large electric hand lamps.
- 1 Portable electric light and cable connections.
- 2 Pairs rubber gloves (for handling electric cables).

- 5 Pairs rubber gloves for postmortem work.
- 1 Two-handled cross-cut saw.
- 6 15-ft. lengths of  $1\frac{1}{4}$ -in. wire rope.
- 1 100-ft. length  $\frac{5}{8}$ -in. wire rope with thimbles and shackle.
- 1 50-ft. length  $\frac{5}{8}$ -in. wire rope with thimbles and shackle.
- 6 Picks (light, 4 lb.), or cross mattocks.
- 3 Crowbars.
- 9 Pointed shovels or forks.
- 3 Sledge hammers.
- 2 Hand saws.
- 2 Wheelbarrows.
- 4 Hurricane lamps.
- 6 Debris baskets.
- 2 Bucket pumps (for combating incendiaries).
- 1 Tarpaulin or sheets of corrugated iron (to protect trapped persons from falling debris until released).
- \*Box of miscellaneous tools, spikes, timber dogs, etc.
- Timber, blocks for fulcrums for levers, folding wedges, etc.
- Supply of puddled clay, for dealing with gas leaks.

***\*Contents of the Box of Tools:***

- 1 Claw hammer (size 5).
- 1 Pincers, 8 in.
- 1 Wooden mallet.
- 1 12-in. hacksaw frame and blade, with 12 spare blades.
- 1 Marking gauge.
- 3 Cold chisels, 8-in., 12-in., and 18-in. by  $\frac{3}{4}$ -in.
- 1 Pair 12-in. steel wedges, with tongs.
- 1 Square,  $10\frac{1}{2}$ -in.

- 1 Stilson wrench, 14 in.
- 2 Double-hooped wood chisels, 1-in. and  $\frac{3}{4}$ -in.
- 1 Short two-edged pruning saw.
- 1 Club hammer, 3 lb.
- 1 Brace with  $\frac{3}{4}$ -in. and 1-in. center bits.
- 1 Flooring awl.
- 1 Bolt cutter.
- 1 Wheel-type pipe cutter.
- 1 Scaffolder's hammer.
- 1 Stopcock key.

### ***First-Aid Equipment:***

- 1 First-Aid box.
- 2 First-Aid pouches.

### ***Action of Rescue Party***

## **AT AIR RAID INCIDENT**

### ***Upon Receipt of an Alert:***

1. On the receipt of a yellow warning message, the Rescue Squad should go immediately to its depot and should remain there until further instructions are received. The Driver should satisfy himself that the engine of his truck will start and should then join the rest of the Squad in the shelter.
2. The Leader with his messenger should wait for telephone instructions from the responsible Chief of Rescue Service. On receipt of instructions dispatching his Squad to an incident the Leader should send his messenger to instruct the Squad to prepare for action.
3. The Leader should inspect the men to see that they are properly equipped. They should be

wearing steel helmets and have gas masks. Two of the men should be equipped with water bottles, another should carry blankets. One of the men with water bottles should also carry first-aid box and splints. Another should be equipped with fireman's ax and torch. The Leader should also carry a torch.

***Transit to the Scene of an Incident.***—

***The Route:*** The Squad should proceed to the incident following any special route or direction relayed by the Depot Superintendent from the control center, and the Driver should follow the instructions given by the Leader *en route*. If obstruction is met with on the way, an alternative means of access to the incident should be sought and the obstruction reported to the control center.

***Traffic Lights.***—Drivers should obey automatic traffic signals even when on urgent duty during an air raid, unless they can see with certainty that the road is absolutely clear. It must be remembered that other vehicles on errands of equal urgency may be traveling the same road.

***Approach to Contaminated Areas.***—

When gas is present, the direction of the wind should be noted and the Squad should avoid approaching the scene of the incident in the face of a wind that is tainted with gas. In such a case the Driver should make sufficient detour to arrive "with the wind" and take especial care not to drive into a contaminated area and thus expose his vehicle and its equipment to the risk of contamination. He should approach the scene of the incident slowly in order to establish contact with guides, wardens, or "Incident Officers."

***Incident Officer.***—Where the circumstances at an incident necessitate it, the Commander will send an Incident Officer to represent him on the spot for the purpose of coordinating the work of the services. For this purpose he will establish a *Reporting Base* at which all available information will be centralized and from which general supervision will be exercised over the progress and conduct of the incident.

He should not supervise the technique of rescue and first-aid work, but he should look to the Squad Leaders to cooperate with each other under his general direction and to keep him informed as to the progress of the work.

The Incident Officer, who is responsible for seeing that Squads are summoned in sufficient strength, should form a link between the incident and the Commander (keeping the latter informed as to progress of events), and should act as an agent for the respective services whereby reinforcements of personnel, materials, and equipment can be obtained when request is made to him.

***Arrival at Scene of Incident.***—*Immediate Action:* On arrival at the scene of an incident, the Leader should halt the vehicle in a reasonable position relative to the incident, taking care not to block other traffic and should act on any directions which may be given by Auxiliary Police, or Wardens instructed to direct traffic. The Leader, accompanied by his messenger, should report to the Incident Officer in charge at the control post or reporting base or to the senior officer present. He should give the place of origin of his Squad and its number, and request instructions.



The Squad should remain on the truck until it is parked. The trailer should be unhooked and withdrawn about 8 feet to the most advantageous position or the parking place.

**Reporting.**—When reporting to the Incident Officer or to the senior officer present the Leader should obtain from him whatever information can be supplied and confirm by his own observations:

- (a) The extent and nature of the damage.
- (b) Whether gas is present and the type (persistent or nonpersistent).
- (c) Where persons are trapped and the approximate number.
- (d) The presence of collapsed or dangerous floors and walls.
- (e) Whether gas, water, or electric supplies have been damaged and require immediate attention in the interests of the casualties.

He should advise the Incident Officer immediately of any serious dangers discovered by him which require immediate or special attention, and of any requests which he may have in respect to rescue operations or the parking of his vehicle.

**Procedure of Rescue.**—*Preliminary Survey:* Having been allocated his portion of the work, the Leader should make a swift preliminary survey and such interim arrangements as will enable the Squad to concentrate on the most urgent matters while he completes the reconnaissance in detail and until he has formulated his organization for dealing with the work as a whole. If the case is beyond the resources

of the Squads present, he should inform the Incident Officer immediately and request the summoning of further Rescue Squads.

**Priority.**—Questions may arise as to the precedence of services at an incident and any point of this nature should be settled by the Incident Officer or the senior ranking officer present. It is generally agreed, however, that when rescue work is urgent, it should take precedence of all services except the Fire Service. Rescue Leaders should make contact with each other, and actively collaborate among themselves and with Leaders of other services.

**Where No Incident Officer Is Available.**—When no Incident Officer is available, the initial responsibility for representing the Rescue Service and for preliminary reconnaissance and organization of rescue work should lie with the first Leader on the scene. He should likewise set up a distinguishable reporting base and keep it manned by one of his men when he is absent from it. Any other Leader arriving subsequently should cooperate faithfully under his collective leadership, and the first Leader should be prepared to continue directing in this capacity until he is relieved by a senior officer of the Service, even if he should find that the work may extend beyond the boundary of his own area into that of another.

**Reconnaissance.**—If a building has not been demolished, systematic search, beginning at the lowest floor level should be made for trapped victims. Search should not be abandoned until all parts of the building and debris have been

thoroughly examined, and a search of adjacent buildings made. The position and condition of the casualties should be carefully noted and recorded and the information passed on to the Stretcher Teams and Wardens at the earliest moment. The Leader should carry a pencil and notebook and should be prepared to make a brief sketch or block plan showing where the more serious damage is located, where casualties are known to await rescue and, if collective rescue work is being carried on, where the various Rescue Squads have been set to work.

Before decision is made as to which of the badly injured victims should be rescued first, the nature of the injuries, position of the victim, and work involved in rescue should all be considered. When a casualty is located and injuries ascertained, it is desirable that a label be attached stating when the casualty was found. This procedure will be of value in case the casualty subsequently dies unidentified.

**Method of Locating Victims.**—A system of tapping such as that employed in mines should be adopted. Tapping can be done readily on a pipe, beam, or solid structure extending into the debris. A system of signals is not necessary. If taps are measured, the buried person will reply in kind providing he is still conscious.

**The Work of Rescue.**—Having satisfied himself as to the number, location, and types of casualties, the Leader should direct his men on the work of rescue. Necessary operations should be carried out with great care so that dangerous movement of debris will not result.

The Rescue Squad may be expected to move injured persons from the upper floors, basements, over obstacles and rough ground, and to make every effort to get them where they will receive attention or be taken to the first-aid post or hospital. If available, the First-Aid Party is responsible for the casualty when the Rescue Squad Leader decides that no further danger will be encountered in removal; and Rescue Squads should not normally move a casualty further than is necessary to remove any possibility of additional injury. If First-Aid Parties are not present, the Rescue Squad will naturally give emergency first aid to the injured.

***Rescue Procedure.***—Each case of rescue work will differ from every other and, for this reason, no set of rules as to procedure can be laid down. It may be necessary to sink a small shaft vertically downward into a mound of debris, and to lower a man into the shaft, thus permitting him to worm his body round to a position where he may best be able to speak with the buried people and more certainly determine their location.

Work with the hands is often the only possible way of dealing with the "rubble" which is left from an air raid. In making a tunnel sufficiently large to permit a man to crawl through, the best procedure is to fill small baskets with bits of debris and pass them from hand to hand to the mouth of the tunnel where they can be emptied.

***Dangerous Buildings.***—During rescue operations, shoring and demolition should be done only where it is essential for the safety of rescuers and casualties. Wrecked buildings must be entered

cautiously, and in walking across damaged floors, rescue workers should stay as close as possible to the wall, noting which way floor joists run, and using the supported end of the joists to avoid undue strain.

Men should consider the probable consequence of every move they propose to make and, although the greatest speed possible is essential, the desire to release victims should not overbalance sound principles of procedure.

Parts of a building which are in a state highly dangerous to the public or are impeding rescue operations should be removed or secured, but attention should be given to possible effects of moving debris which is supporting any part of the structure.

***Demolished Buildings.***—*Methods of Approach:* When effecting rescue from the wreckage of demolished buildings, early decision should be made as to whether to work down from the top of the debris or to tunnel beneath it. The choice between, or in certain circumstances, the combination of these two methods, will depend upon the conditions at the scene of the incident, and upon reliable information as to the probable location of the occupants which may be given by Air-Raid Wardens, Incident Officer, police, neighbors, or persons who have escaped or been rescued from the building.

In directing the work of his men, the Leader will need to utilize his knowledge of planning, construction, and materials to the utmost in the interests of speed and safety. Advantage should be taken of every wall or opening that is likely to afford some degree of security for exploring the



wreckage, and to provide an avenue of approach to the trapped persons. Men should be posted to watch all dangerous structures that are likely to collapse and injure those working. Care should be taken to avoid landslides and further injury to the victims. Save where otherwise practicable all debris in the vicinity of the trapped will have to be moved by hand, and should be deposited clear of the site of rescue in order to avoid the possibility of burying other victims.

### ***Tunnelling and Stripping Debris.***—

When the trapped are understood to be in the lower part of the building—and this is likely to be most often the case—*tunneling* generally provides the swiftest means of access. The other alternative is *stripping the site of debris*. Both methods require the greatest care. Location of victims is very often a matter of reasoned guesswork upon the accuracy of which the chances of survival of the victims depend. The principle of using the recognizable remaining elements of the structure as a basis from which to start the search should be adopted.

No movement should be allowed on top of debris beneath which men are tunnelling. Tunnellers should wear helmets, and handkerchiefs over their noses and mouths. They should be attached by a line before entering under dangerous wreckage, and men should be posted, and arrangements made, to give them any assistance, to pass back messages and to provide them with any article of equipment which they may require. There should be no crowding, confusion, or unauthorized talking or shouting, and a strict watch should be kept for any movement or sound coming from the debris.



**Fire and Water.**—The turning off of the gas, water, and electricity mains should receive prompt attention. The Fire Service should be summoned when basements are flooded and when rescue operations must be carried on from excessive heights inaccessible to the Rescue Squads with the equipment at their disposal. A powerful electric handlamp should be used in buildings to assist the search for casualties when gas mains and service pipes have been damaged.

**Shoring and Demolition.**—Rescue Squads should confine themselves, as regards shoring up, demolition and repair, to tasks of immediate urgency and limited scope. The Leader should inform the Incident Officer of any portions of the building which are likely to collapse and endanger life so that the Demolition and Clearance Crews can be called to deal with them.

**Completion of Work.**—Upon completion of the work on the site, the Leader should see that equipment is collected and checked, line up his men, call the roll, make a verbal report of the work carried out to the Incident Officer, and await instructions as to further work or as to the Squad's return to the Depot. It should be re-emphasized that the Squad should not leave the scene until all equipment is accounted for since loss of one item may make subsequent rescue impossible. On returning to the Depot, members of the Squad should proceed at once to render themselves, their equipment, and their truck ready for further duty if called upon.

**Recurring Raids.**—If another air attack occurs while the Squad is traveling to or from an

incident, the Leader should take all necessary steps to protect his Squad from becoming casualties, and notify the Control Center as to action taken and his whereabouts if he is delayed.

In the event of a further raid at the scene of an incident, men should take care not to be unduly exposed and should see that casualties are quickly sheltered. At night, flares should be extinguished, or the source of light concealed.

**Leader's Report.**—The Leader should record the numbers of injured and dead that have been removed from the buildings and their identification if possible, the address of the property where they were found, the quantity of shoring used, and the loss of any equipment and report these on his return to the Depot.

## LEADER'S REPORT FORM

Squad No. .... Address of depot . . . . . Date .....

Scene of work .....

Nature of work .....

Work done .....

..... Was work completed? .....

Number of injured removed .....

Number of dead removed .....

Particulars of materials and equipment used, lost, or damaged .....

.....

.....

Number of men in squad ..... Hours worked .....

Casualties to personnel .....

Name of leader .....

Further information and full particulars of persons rescued on other side of form.

In addition, a careful record should be kept of the operations in order that the Leader may be able to hand over to the relieving Leader and his relief shift the history of the incident. Unnecessary duplication of work may thus be prevented.

***Salvage of Private Property.***—The primary responsibility for recovering and protecting removable goods from a damaged building rests with the owner, and subject to the requirements of the civilian protection services engaged at the scene of the damage; facilities should be afforded to owners to recover their possessions. The *Municipal Authorities* should endeavor to give such assistance as may be required for the removal and local transport of goods or articles, their storage, and their protection against loss or further damage, particularly where persons are rendered homeless.

### ***Unexploded Bombs.***

Members of a Rescue Squad should not attempt to remove unexploded bombs. The Leader should notify the police of the location of the bomb, rope off the danger area in the vicinity, and suspend further work in that area until the bomb is removed or exploded.

### ***Gas-Proof Clothing.***

The following procedure in regard to gas-proof clothing should be carried out by Rescue Squads:

1. If gas has been reported when a Rescue Squad is called out, members of the Squad should put on protective clothing before leaving the Depot.

2. If gas has not been reported, members of the Squad should not put on protective clothing, but should take it with them in case gas is found to be present or to be used by the enemy at a later stage of the attack.

3. If it is necessary to put on protective clothing before leaving the Depot, personnel should leave all items of personal clothing except underwear at the Depot in charge of the Depot Leader. Personal clothing and personal effects, including money, should not be taken on the truck.

4. When a Rescue Squad proceeds to an incident where gas has not been reported but where gas is discovered in the interval, personnel should change into protective clothing in an evacuated house or building adjacent to the contaminated area and should then proceed to the incident leaving their personal clothing behind in the building in which change was made.

### ***Incendiary-Bomb Control.***

Rescue Squads should not deal with incendiary bombs if personnel adequate to handle them is present. However, there may be occasions when it is necessary for members of the Rescue Service to assist with small fires at the scene of rescue work.

The main point of concern in this connection will be with small fires caused by incendiary bombs dropped among the wreckage of a demolished or partly demolished building. If persons are trapped, certain rescue work may have to be postponed until the fire is under control.

If incendiary bombs require attention, the Leader should detail certain members of the Rescue Squad to deal with them. Because of debris considerable difficulty may be experienced in approaching the source of such a fire. Men should approach as near to the fire as possible, lying down or keeping low with their faces near the floor. In this position it will be found easier to breathe and to see. In their approach to the bombs men should have axes handy for dealing with obstacles.

When the fire is under control and the bomb is entirely consumed, there is still a danger that fire may have crept into unseen places where it may remain unnoticed for some time in a smoldering condition. A thorough search should be made for this purpose and it may be necessary to lift floor boards or to remove paneling and skirting from walls if concealed smoldering is suspected.

# BLACKOUTS

Blackouts are ordered only on the authority of the War Department. A blackout may be ordered during any period when hostile forces are believed to be in the vicinity, whether or not enemy airplanes have been sighted.

**"Blacking Out"** a city means that light sources must be so hidden or dimmed that an enemy bomber will have difficulty in finding the target and lack aiming points such as main street intersections. Following are the general plans used.

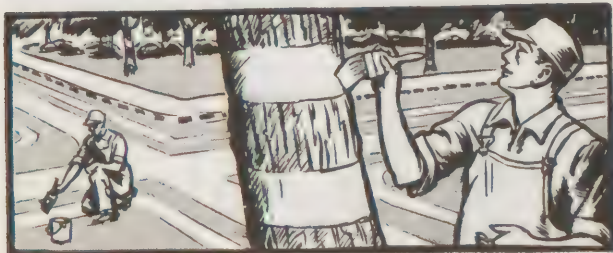
**Street Lights.** These are fitted with low-watt bulbs and covers that diffuse the light.

**Automobiles.** Headlights must be covered except for a small pair of slits and hooded.

**Traffic Lights.** Are treated the same way as automobile headlights.

**Buildings.** Windows and doors must be covered with opaque materials. Paint on the glass, heavy curtains, light "baffles" or screens are some of the ways. No cracks of light must show.

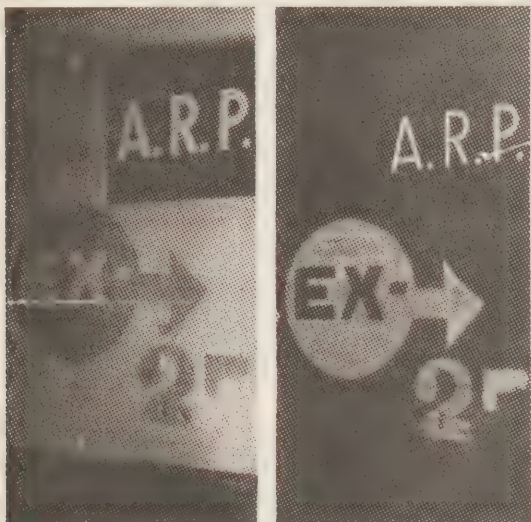
**Aids to Seeing.** Since people have to move about during a blackout, the lack of light may be somewhat offset and safety promoted by—





1. Painting curbs, trees, poles and hydrants with white paint. There is a luminous paint, also, that gives off a faint blue light quite visible in total darkness.

2. Painting signs of luminous paint or making them of fluorescent material on which shines ultra-violet or "black" light or installing dimly lighted signs with horizontal screens to diffuse the light.



3. Painting white fenders and stripes around automobiles.

Members of the Citizens' Defense Corps who have outside duties during a blackout can be identified more easily if they wear a white cap or white-painted helmet; also a white belt fitted with crossed straps over the shoulders.



## ***Individual Conduct During a Blackout.***

Observe traffic rules. Keep to the right and remember the man or vehicle approaching *from* your right *has* the right of way.

If you must smoke, go into a hallway or covered place to strike the match. No smoking in the open is an even better rule. Make all crossings at intersections. It is hard for a driver to see you.

Be sure that everyone you know is acquainted with these simple rules. .



**DO NOT** run when air raid warnings sound after dark during blackouts.



Use your flashlight as little as possible, if at all. **Never** point it upward.



Curb edges and direction signs painted white will help you find your way.



Keep pets on leash if you take them out after dark.



If an air raid warning sounds, get under cover, you may be hit by shell fragments.



If you don't know the neighborhood the first policeman or warden will tell you where to go.



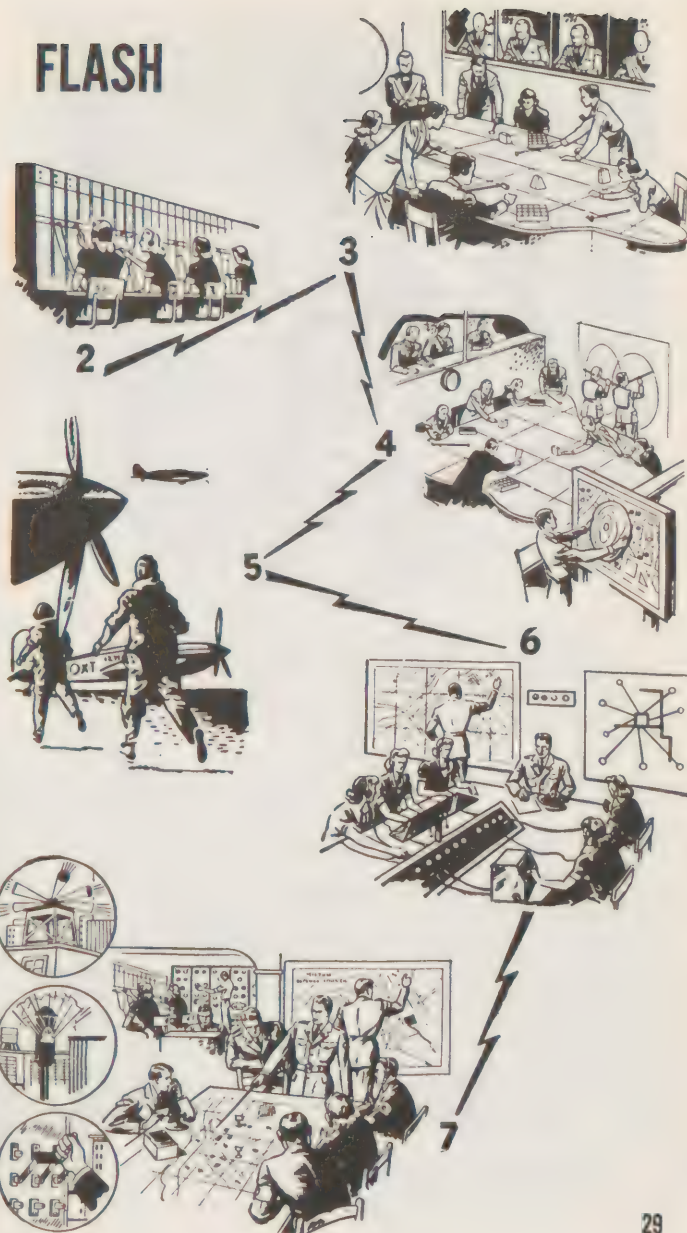
## ARMY

When an observer sights a group of hostile planes, he picks up his telephone (1) and says *Army Flash*. The Central Operator (2) at once connects him with the assigned Filter Center (3) to which he reports the type of planes, number, height, and direction of flight. When several reports agree, watchers transmit the data to an Information Center (4) where developments over a large area are plotted on a huge map.

Watching the map, Air Corps officers order interceptor planes into the air, (5) direct them to contact with the enemy; another officer notes the cities threatened and flashes a yellow, blue, or red alarm, according to the degree of danger, to the proper Warning District Center (6).

At this point, Civilian Defense takes over from the Air Corps, telephones the warnings to Control Centers (7) within the Warning District. And here the Commander of the local Citizens' Defense Corps orders the alert, has the public warning sounded usually short blasts on air horns, power horns or steam whistles or on the wailing sirens—and if the bombers arrive overhead, directs the operation of passive defense. Learn the air raid warning for your city.

## FLASH





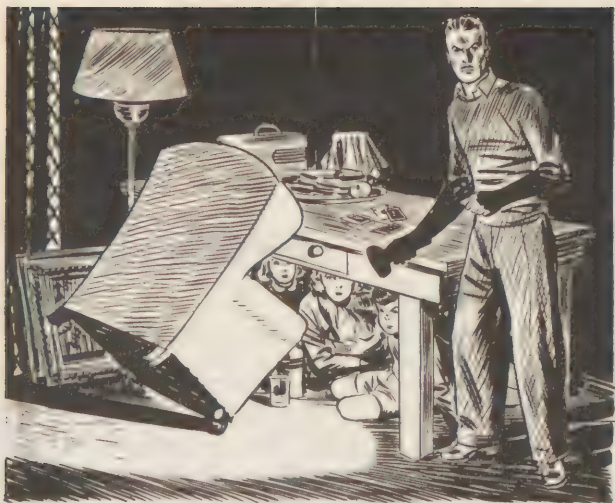


The Refuge Room

## WHAT TO DO IN AN AIR RAID

At the yellow warning, if you are not already on duty, you will be summoned to your post and will carry out orders until relieved. However, here are the rules for those who do not have assigned duties when the air raid warning comes. Memorize them carefully so that you can in turn instruct others. Here is what to tell them:

1. If away from home, seek the nearest shelter. Get off the street.
2. If you are driving, first park your car at the curb; be sure all lights are shut off.
3. If you are at home, send the others to the refuge room. This should be a comfortable place with as little window exposure as possible, equipped with drinking water, things to read, toilet facilities, a flashlight, a portable radio, a sturdy table, and food if you like.
4. Turn off all gas stove burners but leave pilot lights, water heaters and furnaces alone. Leave electricity and water on. Fill some large containers or a bathtub with water.
5. Check up on blackout arrangements. Don't let a crack of light show to the outside.



6. See that everyone's eyeglasses and dentures are in the refuge room. There should be additional warm garments for everyone, too.

7. Keep out of line of windows. Fragments and glass splinters cause most casualties.

8. If bombs fall nearby, get under a heavy table, an overturned davenport.

9. Don't rush out when the "all clear" signal sounds. Maintain the blackout. The Raiders may return.

10. Otherwise, keep cool; be sensible and set an example to others.

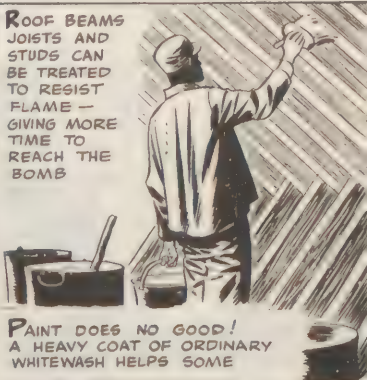
## FIRE DEFENSE

IT WILL BE VERY DIFFICULT TO FIGHT A MAGNESIUM BOMB UNLESS SOME WORK IS DONE BEFORE THE ATTACK



ALL FURNITURE TRUNKS AND JUNK OF ALL KINDS SHOULD BE REMOVED FROM ATTIC OR TOP FLOOR!

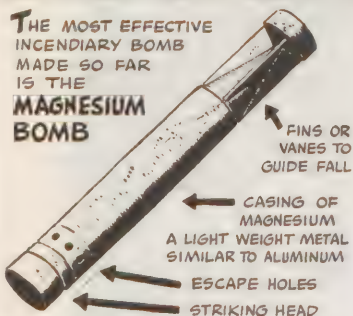
ROOF BEAMS JOISTS AND STUDS CAN BE TREATED TO RESIST FLAME — GIVING MORE TIME TO REACH THE BOMB



PAINT DOES NO GOOD! A HEAVY COAT OF ORDINARY WHITEWASH HELPS SOME

# HOW THE MAGNESIUM BOMB WORKS

THE MOST EFFECTIVE INCENDIARY BOMB MADE SO FAR IS THE **MAGNESIUM BOMB**



LENGTH, ABOUT 14" WEIGHT, 2.2 POUNDS

A LARGE BOMBER CAN CARRY 1000 SUCH BOMBS!



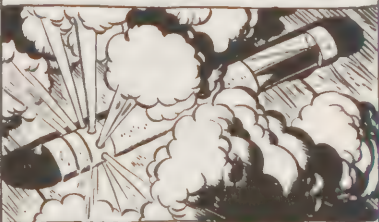
THEY ARE USUALLY RELEASED 20 TO 50 AT A TIME, SPREAD LIKE SHOT BEFORE STRIKING.

DROPPED FROM A HEIGHT OF 20,000 FEET, THEY DEVELOP ENOUGH FORCE TO PENETRATE AN AVERAGE ROOF...



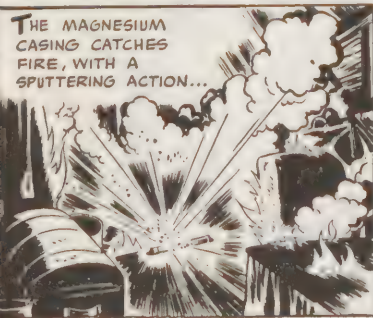
...THUS, THEY USUALLY START BURNING IN A TOP STORY OR ATTIC

THE THERMITE FILLING OF IRON OXIDE AND FINELY DIVIDED ALUMINUM IS THEN IGNITED AND DEVELOPS A FIERCE HEAT OF **OVER 4500 DEGREES!**



THE FLAME ROARS OUT OF THE ESCAPE HOLES.

THE MAGNESIUM CASING CATCHES FIRE, WITH A SPUTTERING ACTION...



...FLAMING MOLTEN METAL IS THROWN ABOUT AND SURROUNDING INFLAMMABLE MATERIAL CATCHES FIRE

IF NOT QUICKLY QUENCHED, THE BOMB WILL BURN THROUGH THE FLOOR, SETTING ADDITIONAL FIRES ON THE FLOOR BELOW...



BUT, WITH PROMPT ACTION AND SIMPLE TOOLS, A MAGNESIUM BOMB CAN BE QUENCHED!



# CONTROLLING WITH WATER

TO FIGHT A BOMB WITH WATER, YOU NEED TWO MEN AND SPECIAL EQUIPMENT. REMEMBER, YOU CAN'T PUT OUT THE BOMB — YOU FEED IT WATER, TO BURN OUT!

ONE MAN PUMPS 80 STROKES A MINUTE TO KEEP A STRONG ENOUGH PRESSURE TO THROW A JET 30 FEET, AS SPRAY, 15 FEET. ONE MAN FIGHTS THE FIRE.

YOU USE UP A BUCKET IN 1½ MINUTES



SPECIAL DOUBLE ACTION PUMP WITH 30 FEET OF HOSE AND SPECIAL NOZZLE NEEDED.

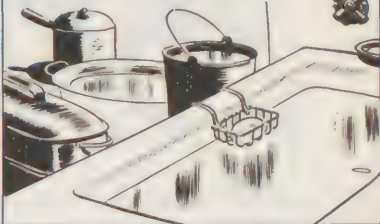


A THIRD PERSON IS MOST USEFUL TO CHECK OTHER POINTS FOR FLAME REPLENISH WATER AND RELIEVE PUMPER.

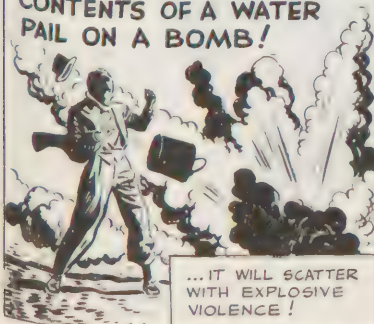


AMPLE STORAGE OF WATER SHOULD BE PROVIDED IN ADVANCE, AS WATER MAINS MAY BE BROKEN BY HIGH EXPLOSIVES AND PRESSURE LOST! FILL THE TUB, EXTRA PAILS AND DON'T FORGET IN A PINCH —

THE CONTENTS OF HOT WATER OR HEATING BOILERS!



NEVER THROW THE CONTENTS OF A WATER PAIL ON A BOMB!



IF CONTROL OF THE BOMB SEEMS DOUBTFUL, HAVE AN ALARM TURNED IN, BUT CONTINUE FIGHTING THE BOMB UNTIL HELP ARRIVES OR SUPPLIES ARE EXHAUSTED!



1 LEARN NOW HOW TO CALL



2 LEARN NOW LOCATION OF NEAREST ALARM...

MILTON CANIFF

# CONTROLLING WITH SAND

APPROACH THE BOMB IN A CROUCHING OR CRAWLING POSITION. PLACE THE SAND BUCKET, UPSET, TO ALLOW A FULL-ARM SWING TOWARD THE BOMB



TRY TO COVER THE BOMB WITH DRY SAND, TO CONFINE IT'S ACTION, SO THAT YOU CAN GET NEAR ENOUGH TO SCOOP IT UP ON THE SHOVEL



WHEN THE BOMB IS UNDER FAIR CONTROL, SCOOP IT UP ON THE SHOVEL, FIRST RIGHTING THE BUCKET, BUT LEAVING SOME SAND IN THE BOTTOM...



...IF THE BOMB CAN BE DROPPED FROM A WINDOW TO SOME PLACE WHERE IT CAN BURN OUT WITHOUT HARM —

**GET RID OF IT THAT WAY!**



... OTHERWISE, PUT IT IN THE BUCKET ON TOP OF SAND, COVER IT WITH MORE SAND ...



... THEN, HOLDING THE BUCKET ON THE SHOVEL, CARRY IT OUT OF THE HOUSE ...





## ABOUT FIRE EXTINGUISHERS

Many houses and public buildings have fire extinguishers. They will be as useful as ever in putting out fires caused by an incendiary bomb. For putting out the bomb itself, the extinguisher may not be suitable.

Read the label. If it says that the contents include CARBON TETRACHLORIDE, it cannot under any circumstances be used on a magnesium bomb. It is not only ineffective, it may cause dangerous gas to be generated. After the bomb is burnt out, use it on any remaining fire.

All water-type extinguishers are suitable. If the label says SODA-ACID, that's simply a means of creating pressure in the extinguisher. Turn it upside down, use it. You can get a spray effect by putting the thumb over the nozzle, use the jet on surrounding fires. However, *one extinguisher is not enough to burn out a magnesium bomb*. And you cannot refill the extinguisher.

It is best to have sand or pump-bucket equipment handy, use them on the bomb, and save the extinguishers for resulting fires.

A foam extinguisher will also help to control a bomb, but one extinguisher load will not finish the job.


See that the extinguishers you know about are ready for use.




























# CHEMICAL WARFARE AGENTS

## REFERENCE AND TRAINING CHART

- The importance of proper first aid for gas victims cannot be overemphasized. The following are general rules which apply in all cases.
- Act promptly and quietly; be calm.
  - Put a gas mask on the patient if gas is still present or, if he has a mask on, check to see that his is properly adjusted. If a mask is not available, wet a handkerchief or other cloth and have him breathe through it.
  - Keep the patient at absolute rest; loosen clothing to facilitate breathing.
  - Remove the patient to a gas-free place as soon as possible.
  - Summon medical aid promptly; if possible, send the victim to a hospital.
  - Do not permit the patient to smoke, as this causes coughing and, hence, exertion.

LEGEND

			
HOSPITAL CASE	FIRST AID STATION	LUNG PROTECTION NEEDED	COMPLETE PROTECTION NEEDED

CLASS	NAMES AND SYMBOLS	FORM	ODOR	PERSISTENCE	TACTICAL CLASS	PROTECTION	FIRST AID (After removal from gassed area)	PHYSIOLOGICAL EFFECT
VESICANTS	MUSTARD <small>BIS(2-CHLOROETHYL) SULFIDE</small>	LIQUID AND VAPOR	 Lard, Burntmatch, Mustard	One day to one week. Longer if dry or cold.			Undress; remove liquid mustard with protective emulsion. Wash parts, or versene; bathe, wash eyes and nose with soda solution.	Blepharitis. Burns skin or membrane. Inflammation respiratory tract leading to pneumonia. Eye irritation, conjunctivitis.
	LEWISITE <small>CARBONYL BIS(2-CHLOROETHYL) AMINE</small>	LIQUID AND VAPOR	 Greasy	One day to one week. Longer if dry or cold.			Undress; remove liquid lewisite with hydrogen peroxide, lye or glycerine or versene bath; wash eyes and nose with soda. Rest—Doctor.	Burning or irritation of eyes, nasal passages, respiratory tract, skin. Acute nasal pain.
	CHLOROPICRIN <small>2,2,6,6-TETRACHLORO-3,5-PYRIDINE DIOXIDE</small>	GAS	 Fragrant odor	Up to 6 hours. Woods 12 hours.			Wash eyes, keep quiet and warm. Do not use bandages.	Causes severe coughing, crying, vomiting.
LUNG IRRITANTS	DIPHOSGENE <small>TETRACHLORO-2,2-DICARBONYL DIISOCYANATE</small>	GAS	 Garage, Acid	30 minutes.			Keep quiet and warm. Give coffee as a stimulant.	Causes coughing, breathing difficulty, eyes water, nose.
	PHOSGENE <small>CARBONYL CHLORIDE</small>	GAS	 Bitter hay, Green tea	10 to 30 minutes.			Keep quiet and warm, bed rest. Coffee as a stimulant. Loosen clothing, no alcohol or cigarettes.	Irritation of lungs, occasional vomiting, tears in eyes, dazed feeling, occasionally symptoms delayed. Later collapse, heart failure.
	CHLORACETOPHENONE <small>C.H.<sub>3</sub>.CO.CH<sub>3</sub>.Cl</small>	GAS	 Apple blossoms	10 minutes.			Wash eyes with cold water or boric acid solution. Do not bandage. Face wind. For skin, sodium chloride solution.	Makes eyes smart. Slight watery. Tears flow. Temporary.
LACRIMATORS	BROMBENZYL CYANIDE <small>C.H.<sub>3</sub>.CH<sub>2</sub>.CN</small>	GAS	 Sea Trout	Several days. (Weak in water.)			Wash eyes with boric acid. Do not bandage.	Eyes smart, shut, tears flow. Effect lasts some time. Headache.
	ADAMSITE <small>DIPHENYLAMINE PHOSPHINE</small>	GAS	 Ear Jaws	10 minutes			Keep quiet and warm. Loosen clothing. Rub nose. Spray nose with neo-synephrin or salt bleaching powder. Aspirin for headache.	Causes sneezing, such depressed feeling, headache.
	DIPHENYLCHLORARSINE <small>(C.H.<sub>3</sub>)<sub>2</sub>.AsCl</small>	SMOKE	 Sea Pea	Summer 10 minutes			Remove to pure air, keep quiet. If on bleeding, give a bottle.	Causes such feeling and headache.



# WAR GASES

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## ***General Notes.***

War "Gases," or chemical agents used to produce casualties, are surprise weapons. As this is written, they have not been used against the British or others trained to protect themselves. They have been used against the Ethiopians and the Chinese.

A gas-tight room suitably located offers fair protection against any probable concentration of war gas in a city. For those whose duties take them into the streets a gas mask offers full protection against all but the "blister gases" (liquid vesicants). To enter areas where mustard or lewisite is present, full protective clothing is needed.

War gases may be dropped in bombs or simple containers and liquid vesicants may also be sprayed by airplanes.

The gas warning is a "percussion sound"—that is, bells, drums, hand rattles, rapidly struck resonant objects of any kind. If the presence of gas is suspected, report to the nearest warden. Do not shout if distant gas alarms are heard. The danger is local and the spreading of an alarm must be left to the wardens.

The notes on the following pages are simply for reference for those who have received instruction in protection against gas. Reading them will not by itself make you an expert in gas defense.

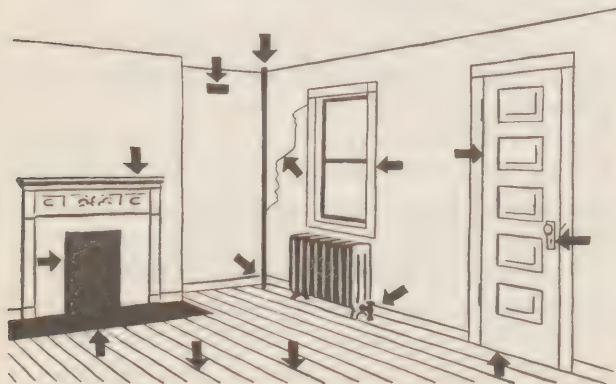
# THE GAS-TIGHT ROOM

War gases hug the ground, flow into cellars and basements. Upper floors of a dwelling are away from dangerous concentrations. If all openings and cracks are closed, a room three stories from the ground will offer good protection against war gases.

To stop cracks and small openings, tape of various kinds may be used. A mush made by soaking newspapers in water or patching plaster may be used for caulking larger openings. A piece of wall board, nails and caulking material may be kept handy to cover a window broken by the blast of high explosives.

One door may be used as an entrance by fastening over it a blanket in such a way as to seal it tightly when no one is going in or out. If soaked in oil to close the air spaces, the blanket is more effective.

Store necessary supplies in such a room—food, water, chairs, a battery-operated radio, flashlight and by all means provide some sort of toilet facilities use it as the refuge room.





Allow 20 square feet of floor space for each person who is to occupy an average room with a ceiling nine feet high. This will give enough air to occupy the room 10 hours.

The illustration shows where to stop up cracks, how to hang the blanket at the entrance door.

### ***“Blister Gases” and Decontamination.***

Lewisite and mustard “gas” are liquids in the normal state. They give off a dangerous vapor that acts as a war gas and unless chemically neutralized may persist for a week, contaminating the air for a considerable distance down wind.

Full protection against these chemical agents is afforded by gas-proof clothing, covering the wearer from top to toe and tightened at wrists and ankles. The greatest care must be used in undressing after exposure to lewisite or mustard and this is done at personnel decontamination stations, where vesicant casualties are also taken for first aid.

Decontamination of streets, walls, and buildings is effected principally by means of chloride of lime (bleaching powder) freshly mixed with earth and water as a slurry or paste. It must be thoroughly worked into cracks and crevices and the resulting product flushed away. This work is done by the decontamination squads.

The liquid vesicants are very penetrating and ordinary shoes or clothing offer no protection. Do not go into the streets after a gas alarm has been sounded except on direction of the Warden.

RANK DESIGNATION	▲	▲ ▲	▲ ▲ ▲	▲ ▲ ▲ ▲	△	△ △	△ △ △	★	★★	★★★	★★★★	★★★★★
AIR RAID WARDEN	FIRST CLASS	SENIOR OR SECTOR WARDEN	ZONE LEADER	GROUP LEADER	CHIEF WARDEN	STATE WARDEN	NO OTHER RANKS					
AUXILIARY FIREMEN	"	SQUAD LEADER	PLATOON LEADER	COMPANY LEADER	FIRE CHIEF	STATE FIRE COORDINATOR	NO OTHER RANKS					
AUXILIARY POLICEMEN	"	"	"	"	CHIEF OF POLICE	NO OTHER RANKS						
BOMB SQUADS	"	"	NONE	"	"	NO OTHER RANKS						
RESCUE SQUADS	"	"	REPORT LEADER	"	FIRE CHIEF	NO OTHER RANKS						
MEDICAL FIELD UNITS	"	TEAM LEADER	SQUAD LEADER	UNIT LEADER	CHIEF OF E. M. S.	STATE MEDICAL DIRECTOR	NO OTHER RANKS					
MEDICAL AUXILIARIES (stretcher teams)	"	" ★	"	NO OTHER RANKS								
NURSES' AIDES	NO RANK DESIGNATIONS											
EMERGENCY FOOD AND HOUSING	FIRST CLASS	UNIT LEADER	DEPOT LEADER	COMPANY LEADER	CHIEF WARDEN	NO OTHER RANKS						
DRIVERS UNITS	"	CONVOY LEADER	"	"	NO OTHER RANKS							
MESSENGERS	"	SENIOR MESSENGER	PLATOON LEADER	"	NO OTHER RANKS							
ROAD REPAIR CREWS	"	CREW LEADER	DEPOT LEADER	"								
DEMOLITION AND CLEAR.	"	"	"	"	CHIEF OF EMER. WORK S.	NO OTHER RANKS						
DECONTAMINATION SQUADS	"	SQUAD LEADER	STATION LEADER	"								
FIRE WATCHERS	"	NO OTHER RANKS										
REPAIR CREWS	"	CREW LEADER	SERVICE LEADER	NONE	CHIEF OF UTILITIES	NO OTHER RANKS						
LOCAL STAFF	"	AS REQUIRED		STAFF UNIT LEADER	CONTROLLER	COMMANDER	COORDINATOR	NO OTHER RANKS				
STATE STAFF	"	AS REQUIRED			AS DESIGNATES	AS DESIGNATED	ASBT COORDINATOR	COORDINATOR	NO OTHER RANKS			
U. S. STAFF	"	AS REQUIRED				AS DESIGNATED	AS DESIGNATED	AS DESIGNATED	REGION DIRECTOR PRINCIPAL ASSTB	U. S. DIRECTOR		
EQUIVALENT ARMY TERM	PVT IN CLASS	NON-COMM OFF	LIEUTENANT	CAPTAIN	MAJOR	COLONEL	BRIG GEN.	MAJ GEN	LIEUT GEN	GENERAL		

# CITIZENS' DEFENSE CORPS

The team of trained civilian services organized to operate the passive defense is known as the Citizens' Defense Corps. It includes regular forces of the city—police, firemen, welfare workers, sanitation men—as well as volunteers. It operates as a unit under the local Defense Coordinator.

## *Staff.*

The Citizens' Defense Corps is headed by a Commander assisted by a staff. His second in command is the Executive Officer. There are others who operate the control center and the communications, account for personnel and property and assign transportation. The Chiefs of the Fire and Police Departments assist him in the passive defense. There is a Chief Air Raid Warden, a Chief of Emergency Medical Services, and others who control groups of the enrolled volunteers. Learn the organization of the Citizens' Defense Corps in your community.

## ***Enrolled Volunteer Services of The Citizens' Defense Corps.***



Air Raid Wardens are in complete charge of a sector containing the homes of about 500 people. To them the warden is the embodiment of all Civilian Defense.



Auxiliary Firemen assist the regular fire-fighting forces.



Auxiliary Policemen assist the police department in enforcing blackout restrictions, in traffic control, and in guard duties.



Bomb Squads are specially trained squads of police to handle and dispose of time bombs and duds.



Rescue Squads are trained crews of about 10 men each with special equipment to rescue the injured from debris.



Medical Forces consist of first-aid parties and stretcher squads and personnel at casualty clearing stations. Members of these forces are doctors, trained nurses, and assistants.



Nurses' Aides assist nurses. They have special Red Cross Training.



Emergency Food and Housing Corps members provide welfare services to the needy and homeless.



Drivers Units consist of emergency drivers of vehicles used by the Civilian Defense services.



Messengers carry supplies, dispatches, and messages wherever needed.



Road Repair Crews restore normal flow of traffic as quickly as possible. Utility repair men work with these crews and with demolition squads.



Demolition and Clearance Crews remove rubble, fill bomb craters, and remove unsafe walls or parts of buildings.



Decontamination squad members are specially trained to treat clothing and equipment as well as streets and walls contaminated by war gas.



Fire Watchers must spot and combat incendiary bombs.

# A MANUAL OF DRILL

*for the*

## CITIZENS' DEFENSE CORPS

*Adapted from the Basic Field Manual of the  
United States Army*

Basic drill is required of a volunteer for award of the insigne. Drill for units of the Citizens' Defense Corps, moreover, is recommended as it helps to coordinate the work of individuals under a single command. The purposes of drill are:

- 1 To enable a leader to move his unit from one place to another in an orderly manner.
- 2 To aid in disciplinary training by instilling habits of precision and response to the leader's orders.
- 3 To provide a means, through ceremonies, of enhancing the morale; develop a spirit of cohesion; and give an interesting spectacle to the public.
- 4 To give leaders practical training in commanding volunteers.

*Drills should be frequent, intensive, and of short duration.*



## ***General.***

A normal squad of volunteers contains 12 men or 12 women, all of one service. It consists of a leader, an assistant leader, and other personnel. As far as practicable, the squad is kept intact. The usual formation of the squad is a single rank or single file. This permits variations in the number of men composing the squad.

## ***To Form the Squad.***

The command is; FALL IN. At the command FALL IN the squad forms in line as shown. Squad leader on the squad's extreme right, assistant leader on the squad's extreme left.

To secure uniformity, the tallest leader is put in charge of the first squad, the second tallest in charge of the second squad, etc. Assistant

**Fig. 1—A Squad in Line**



leaders are similarly arranged. Other volunteers are placed according to height beginning with the tallest being placed next to the leader.

On falling in, each man except the one on the left extends his left arm laterally at shoulder height, palm of the hand down, fingers extended and



joined. Each man, except the one on the right, turns his head and eyes to the right and places himself in line so that his right shoulder touches lightly the tips of the fingers of the man on his right. As soon as proper intervals have been obtained, each man comes to attention, drops his arm smartly to his side and turns his head to

Fig. 11—A Volunteer at Attention



the front, heels are together, feet forming a right angle; knees are straight without stiffness, hips level and drawn back slightly, body erect and resting equally on hips, chest lifted and arched, shoulders square and falling equally. Arms hang straight down without stiffness with the back of the hands out, fingers held naturally. Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical, eyes straight to the front. The weight of the body rests equally on the heels and the balls of the feet. In assuming the position of attention the heels are brought together smartly and audibly.

(Leaders and assistant leaders will be appointed under authority defined by the Chief of the Service of which the squad forms a part.

### ***To Form at Close Intervals.***

The commands are: At Close Interval, **FALL IN**. At the command **FALL IN**, the volunteers fall in as described above, except that close intervals are obtained by placing the left hands on the hips. In this position the heel of the palm of the hand rests on the hip, the fingers and thumb are extended and joined, and the elbow is in the plane of the body.



**Fig. III—A Volunteer Falling in at Close Interval**

## ***To Aline the Squad.***

If in line, the commands are: Dress Right, DRESS, Ready, Front. At the command DRESS, each man except the one on the left extends his left arm (or if at close interval, places his left hand upon his hip), and all aline themselves to the right. The instructor places himself on the right flank one pace from and in prolongation of the line and facing down the line. From this position he verifies the alinement of the men, ordering individual men to move forward or back as is necessary. Having checked the alinement, he faces to the right in marching and moves three paces forward, halts, faces to the left and commands: Ready, FRONT. At the command FRONT, arms are dropped quietly and smartly to the sides and heads turned to the front.

## ***Rests.***

Being at a halt the commands are: FALL OUT, REST, AT EASE, and PARADE REST.

At the command FALL OUT, volunteers leave the ranks but are required to remain in the immediate vicinity.

At the command REST, one foot is kept in place. Silence and immobility are not required.

At the command AT EASE the right foot is

kept in place. Silence but not immobility is required.

At the command of execution **REST** of Parade **REST**, move the left foot smartly 12 inches to the left of the right foot keeping the legs straight so that the weight of the body rests equally on both feet. At the same time, clasp the hands behind the back, palms to the rear, thumb and fingers of the right hand clasping the left thumb without constraint; preserving silence and immobility.

Being at any of the rests except **FALL OUT**, to resume the position of Attention, the commands are Squad (or other unit being commanded) **ATTENTION**. At the command **ATTENTION** take that position in your squad.

### ***Eyes right (left).***

The commands are: **Eyes** (Preliminary Command), **RIGHT** (Command of Execution) (**LEFT**) Ready **FRONT!** At the command **RIGHT**, each man turns his head and eyes to the right. At the command **FRONT** the head and eyes are turned to the front.

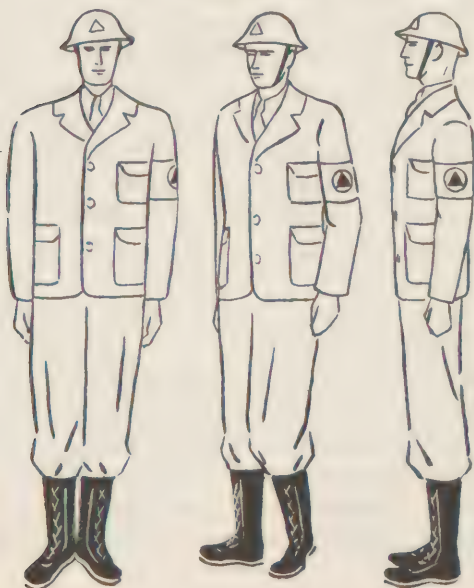
## **Facings.**

*(All Facings are executed at the halt.)*

*To the flank.*—The commands are **Right (Left) FACE**. At the command **FACE**, slightly raise the left heel and the right toe: **Face to the right**, turning on the right heel, assisted by a slight pressure on the ball of the left foot. Next, place the left foot beside the right. Exercise **Left FACE** on the left heel in a corresponding manner.

*To the rear.*—The commands are: **About FACE**. At the command **FACE**, carry the toe of the right foot a half-foot length to the rear and slightly to the left of the left heel without changing

**Fig. IV—Executing Right FACE**



the position of the left foot; weight of the body mainly on the heel of the left foot; right leg straight without stiffness. (TWO) Face to the rear turning to the right on the left heel and on the ball of the right foot, place the right heel beside the left.

### ***Steps and Marchings.***

All steps and marchings executed from the halt, except right step, begin with the left foot.

*Quick Time:* Being at a halt, to march forward in quick time, the commands are: Forward MARCH. At the command Forward, shift the weight of the body to the right leg without perceptible movement. At the command MARCH, step off smartly with the left foot and continue the march with steps taken straight forward without stiffness or exaggeration of movements. Swing the arms easily in their natural arcs, 6 inches to the front and 3 inches to the rear of the body. To halt when marching in quick time, the commands are: Squad HALT. At the command HALT, given as either foot strikes the ground, execute the halt in two counts by advancing and planting the other foot and then bringing up the foot in rear.

To Mark Time the commands are; Mark-Time, MARCH.

Being in march at the command MARCH, given as either foot strikes the ground, advance and plant the other foot, bring up the foot in rear, placing it so that both heels are on line and continue the cadence by alternately raising and planting each foot. The feet are raised 2 inches from the ground.



Being at a halt, at the command **MARCH**, raise and plant first the left then the right as prescribed above.

The halt is executed from mark time as from quick time.

*Half Step.*—The commands are: **Half Step MARCH**. At the command **MARCH**, take steps of 15 inches in quick time. To resume the full step from the half step or mark time the commands are: **Forward MARCH**.

*Side Step.*—Being at a halt the commands are: **Right (Left) Step MARCH**. At the command **MARCH**, carry the right foot 12 inches to the right, place the left foot beside the right, left knee straight. Continue the cadence of quick time. (The side step is executed in quick time from the halt and for short distances only.)

*Back Step.*—Being at a halt the commands are, **Backward MARCH**. At the command **MARCH**, take steps, beginning with the left foot, 15 inches straight to the rear.

*To March to the Flank.*—Being in march the commands are: **By The Right (Left) Flank—MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) in marching and step off in the new direction.

*Oblique March.*—Being in march the commands are **Right (Left) Oblique—MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) oblique in marching and step off in the new direction.

To resume the original direction, the commands are—Forward, MARCH. At the command MARCH each individual faces half left (right) in marching then moves straight to the front.

*Change Step.*—The commands are Change Step, MARCH. Being in march at quick time, at the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, plant the toe of the right foot near the heel of the left and step off with the left foot. (Execute the change on the right foot similarly, the command MARCH being given as the left foot strikes the ground.)

*To the Rear.*—To face to the rear in marching, being in march, the commands are: To The Rear, MARCH. At the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, turn to the right about on the balls of both feet and immediately step off with the left foot.

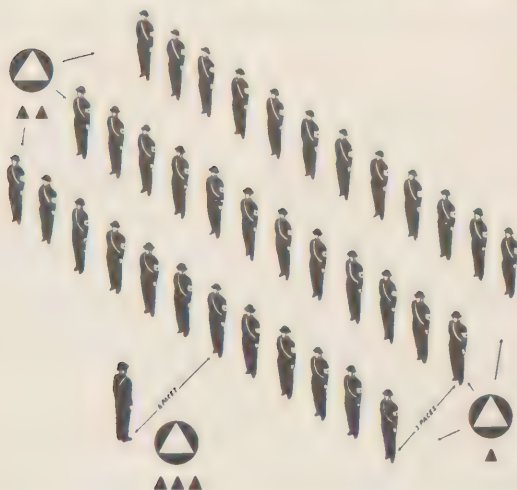
*Other Marchings.*—March other than at Attention. The commands are: Route Step, MARCH or At Ease, MARCH. Route Step MARCH, at the command MARCH Volunteers are not required to march at attention or to maintain silence. At Ease, MARCH is the same as Route Step, MARCH, except that Volunteers will maintain silence.

*Dismissing the Squad.*—The unit being at a halt the leader calls the unit to attention, if they are not at attention, from a point six paces in front of the center of the unit. He then will give the command—DISMISSED. Volunteers are then free to go and do as they please until the next regularly scheduled drill period.

### **Forming the Platoon.**

To form the platoon, which consists of 3 squads—the command, FALL IN will be given by the senior leader facing the area on which he wishes the platoon to form. At this command the unit will form facing the leader with its center 6 paces to his front in 3 parallel lines (each of these lines constitutes a squad). (Should there be insufficient men to form 3 complete squads, skeleton squads of as near equal number as possible will be formed in 3 ranks, squad leaders placing themselves directly behind one another.)

**Fig. V.—A Platoon in Column of Squads**



*From this formation the unit can march; forward, to the right, or to the left.*

## ***Platoon Movements.***

At the command: Forward MARCH, each man steps off with his left foot directly to his own front preserving his relative position and so regulates his step that the ranks remain parallel to his original front.

At the command: Right (Left) FACE Forward MARCH, the unit executes a right face on the heel of the right foot and ball of the left foot at the word FACE and at the word MARCH they step off with their left foot as in moving to the front. (Left face is performed by turning on the heel of the left foot and the ball of the right foot.) In the movements to the right or left the commander of the unit takes a position three paces in front of the left file of his command, at double time if necessary.

Being in a column to change direction the commands are—Column Right (Left) MARCH. At the command MARCH, given as the right (left) foot strikes the ground the first man of the leading element on the right (left) advances one step and then steps off in the new direction using half steps until the men to his left (right) are abreast of him. Full step is then resumed.

*Close Interval—Normal Interval.*—Being in column of threes at normal interval between squads to March or form at Close Interval, the commands are: Close, MARCH. At the command MARCH, the squads close to the center by

obliquing until the interval between men is 4 inches. The center squad take up the half step until the dress has been regained.

If this movement is executed from the halt, the squads close toward the center by executing Right or Left Step until 4-inch intervals are reached.

Being in column of threes at close interval between squads to March or form at Normal Interval, the commands are: Extend, MARCH. At the command MARCH, the squads open to the right and left from the center by obliquing until the normal interval is regained.

If this movement is executed from the halt, the squads Right or Left Step until normal interval is regained.

*Change Direction.*— Being in column of threes to change direction, the commands are: Column Right (Left) MARCH. The right flank man of the leading rank is the pivot. At the command MARCH, given as the right foot strikes the ground, the right flank man of the leading rank faces to the right in marching and takes up the half step until the other men of his rank are abreast of him, then he resumes the full step. The other men of the leading rank oblique to the right in marching without changing interval, place themselves abreast of the pivot man, and conform to his step. The ranks in rear of the leading rank execute the movement on the same ground and in the same manner as the leading rank.

## **Fig. VI**

### ***Forming the Citizens' Defense Corps for Parade***

(Services will form and move as platoons)

- Mayor, Defense Coordinator and Dignitaries.
- Commander, C. D. C.
- ▭ Staff.
- ▭ Messengers.
- ▭ Drivers.
- Fire Department Chief.
- ▭ Auxiliary Firemen.
- ▭ Rescue Squads.
- Police Department Chief.
- ▭ Auxiliary Police.
- ▭ Bomb Squads.
- Colors.
- Warden Service Chief.
- ▭ Air Raid Wardens.
- ▭ Fire Watchers.
- ▭ Emergency Food Housing Units.
- Medical Service Chief.
- ▭ Medical Field Units.
- ▭ Nurses' Aides Corps.
- Public Works Service Chief.
- ▭ Demolition and Clearance Crews.
- ▭ Road Repair Squads.
- ▭ Decontamination Corps.













*United States*  
**OFFICE OF CIVILIAN DEFENSE**  
**Washington, D. C.**

PENALTY FOR PRIVATE USE TO AVOID  
PAYMENT OF POSTAGE, \$300



***A Handbook for***

# **MESSENGERS**



***United States***

**OFFICE OF CIVILIAN DEFENSE**

***Washington, D. C.***



## GET THE MESSAGE THROUGH!

While it will be your duty to do all you can to alleviate suffering, direct others to shelters, notify the proper authorities of fires, lights, etc., your first and foremost duty is to deliver your message and return to your station. Digressing, for any reason, from this duty, even for a few moments, should be carefully weighed against the importance of completing your assigned task. Do not take any unnecessary chances. Avoid areas where there are unexploded bombs, fires, overhanging walls, gas. It may take a little longer to go around them but if you do, you will have a much better chance of fulfilling your mission.

*A Handbook for*

# MESSENGERS



Prepared by Training Section

**U. S. OFFICE OF CIVILIAN DEFENSE**

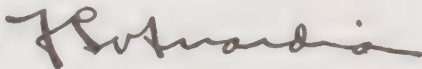
U. S. Government Printing Office, December 1941, Washington, D. C.

# PREFACE

This is one of a series of civilian defense handbooks prepared by the United States Office of Civilian Defense. The purpose of each handbook is to instruct the individual enrolled civilian defense worker in his duties, and to serve as a manual for reference.

The measures for safeguarding civilians against the effects of air attack, which are described in the following pages, have become a necessary part of the defensive organization of any country open to air attack.

Every State and municipality should take such legal or administrative action as may be necessary to provide for the organization, direction, and training of its Messengers.

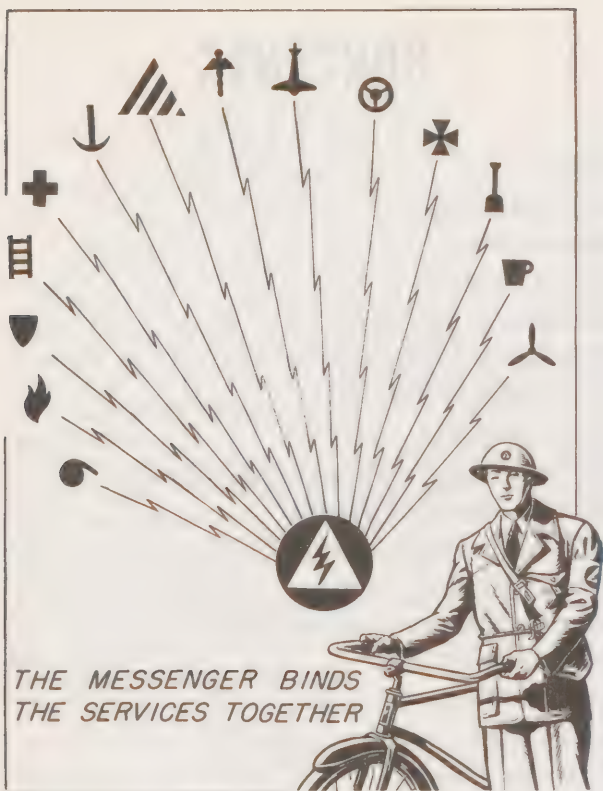


F. H. LaGuardia,  
*U. S. Director Civilian Defense.*

Washington, D. C.  
*December 1941.*

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### **Administration**

Every local Civilian Defense plan provides for the enrolling and training of a group of Messengers: Boy Scouts, Girl Scouts, and others, generally from groups 16 to 21 years of age. Young men and women of these ages are considered most likely to possess the necessary qualifications.

Messengers are directly under the command of the local commander of the Citizens' Defense Corps and are assigned as he, or some member of his staff that he delegates, may direct. Messengers who are assigned to a special post, division, or department will report to that post, division, or department until ordered relieved.



# PERSONAL RECORD

Messenger No. \_\_\_\_\_

Citizens' Defense Corps

of \_\_\_\_\_

(Name of city)

My name is:

(First)

(Initial)

(Last name)

My home address is: \_\_\_\_\_

Phone \_\_\_\_\_ \*

In case of emergency, notify:

\_\_\_\_\_  
(Name)

Whose address is: \_\_\_\_\_

Phone \_\_\_\_\_ \*

\*If you do not have a telephone give the phone number of someone who will call or relay a message.

Completed First Aid Course \_\_\_\_\_

Completed Fire Defense Course \_\_\_\_\_

Completed Gas Defense Course \_\_\_\_\_

Completed General Course \_\_\_\_\_

Awarded Arm Band \_\_\_\_\_

Assigned to \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_

Relieved:

Date \_\_\_\_\_ Time \_\_\_\_\_

Assigned to \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_

Relieved:

Date \_\_\_\_\_ Time \_\_\_\_\_

Assigned to \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_

Relieved:

Date \_\_\_\_\_ Time \_\_\_\_\_

Promoted to \_\_\_\_\_

Date \_\_\_\_\_

## SERVICE RENDERED AS MESSENGER

[illegible]

# THE MESSENGER'S JOB

It is anticipated that it will be possible to make extensive use of the telephone in the transmission of messages but there will be many occasions when this will be impossible. Cables may be broken by high explosives or damaged by saboteurs. Wind, rain, and ice may disrupt this service. Mechanical failures may be encountered and the traffic load will, at times, become so great that a written message will be the only means of communication. Messengers will be stationed at the local control center, message centers, and the various posts, divisions, and departments in order that messages originating with them may be quickly dispatched.

Messengers are used also for interoffice communication in report and control centers as well as in multistoried buildings to lighten the load on the telephone service.

Fire-alarm systems are extremely vulnerable to an air attack and messengers frequently will be stationed at fire-alarm boxes to carry reports to fire stations.

In large factories and business establishments it will be necessary to train messengers to be the connecting links between the various services.

## MESSENGER'S EQUIPMENT

***Each Messenger should be equipped with:***

**A.** Arm Band.

**B.** Visibility belt and/or visibility hat (steel, when available).

**C.** Gas Mask and Gasproof cape when available.

**D.** Bicycle, snow shoes, skis, animal, boat, motorcycle, or automobile (each Messenger furnishes his own).

**E.** Message book and pencil—book should be of duplicating type. One copy to be retained by sender.

The right to wear the Arm Band with the Messenger insignia was given you at the time you finished the Messenger course. It is the badge of your office. It sets you apart as a trained volunteer who has devoted many hours preparing to be of service. It is incumbent upon you to *give your best* at all times. The other services, the general public, and the civil and military authorities regard you with respect because you wear the arm band of a Messenger, able and willing to carry out every mission entrusted to you.

Wear the arm band whenever you are on duty.

## YOUR DUTIES AS A MESSENGER

You have been chosen as a messenger because of your loyalty and dependability. The work you will be expected to do requires a sturdy physique, good eyesight (especially "night sight"), proficiency in many fields, and resourcefulness. On the faithful performance of your mission will at times hang the lives of many of the citizens of

your community which includes many of your family, relatives, and friends. An undelivered or delayed message or package of medical supplies could mean severe suffering and possibly death to many.

Every message is of vital importance and it must be delivered quickly to the person or headquarters to which it has been directed.

A devotion to duty must typify every messenger. It is not a time to question why or how. Your duty is to do to the limit of your ability what you are told to do by those in authority.

Remember, while you are designated as a messenger, any help you might be able to give any of the other services in the way of reporting fires that might have been overlooked, lights that might not have been detected, or injured persons, will lessen the number of casualties and reduce the amount of damage any enemy might inflict. You can also direct people to shelters, First Aid Posts, or Casualty Stations, Decontamination Stations, Wardens' Posts, and how to get to their own homes during a blackout. Keep constantly alert.

Only those of you who have been willing and able have been selected. Your display of patriotism and willingness to be of service to your fellow-men places you under an obligation. The other services of the Citizens' Defense Corps depend on you to perfect the union between them. All your physical strength and intellect must be at the disposal of any and all of these services whenever they require it.

### *Verbal Messages.*

When the urgency of a situation demands that a verbal message be carried, be sure you thoroughly understand it. Repeat it to the sender and the receiver should repeat it to you. Any delay caused by this formality will be more than made up in the positive action that can be taken.

### *Written Messages, Packages, Equipment.*

Every written message, package, or piece of equipment entrusted to you for delivery will be guarded zealously against destruction, mutilation, or contamination.

Written messages should be carried in a dry pocket or musette bag with a protective snap or button flap.

Packages and pieces of equipment should be protected with a covering that will keep out dampness.

## **THE MESSENGER AND MORALE**

In going about your duties it will be well to keep in mind the temperament of the people you contact.

The leaders and personnel of the other services have important jobs to do. They will be under certain physical and mental strains that might cause them to forget that you too have a difficult job to perform. It evolves upon you to set an example of coolness and to promote a successful culmination to the efforts of all the services.

## **KNOWLEDGE OF COMMUNITY**

In your local control center or at the office of the unit to which you are assigned will be a large



map of that area. You must be thoroughly familiar with it. On it will be shown the location of:































- A. Wardens, fire, police, medical, public works, and utility chiefs headquarters.
- B. Fire stations, wardens, stations, alarm boxes, shelters.
- C. Decontamination stations.
- D. First aid Posts or Casualts Stations.
- E. Street blocks, unexploded bombs, gassed areas.

Each will be indicated by a suitable symbol. On another page will be found illustrations and interpretation of symbols that will be used.

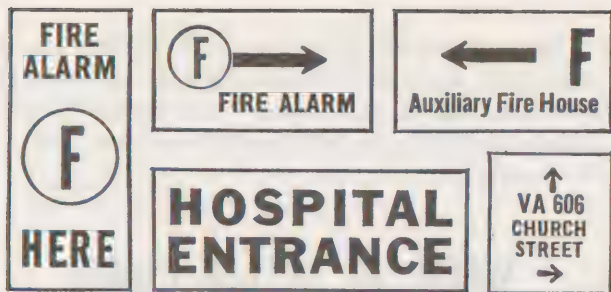
### ***Where to Report***

## Standard Symbols for Maps

*These are the kinds of symbols that will appear on all maps. Familiarize yourself with them.*

 Warden's Post	 Bomb Crater
 Fire Watcher's Station	 Roped-off Area
 Fire Alarm	 Street Car Tracks
 Telephone	 Double Tracks
 Air Raid Shelter	 Cisterns or Water Reserves
 Gas-Proof Air Raid Shelter	 Sector Limits
 Entrance to Shelter	 Zone Limits
 Fire Station	 Site of Gas Bomb
 Decontamination Squad Depot	 Contaminated Area (For large area, blue cross-hatch)
 Repair Squad	 Street Lamp
 Casualty Station	 Fire Hydrant
 Decontaminating First Aid Station	 Sewer Gratings
 Bomb Squad Station	 Manhole
 Location of Incident (Show number in center)	 Tree
 Demolished Building	 Sandbags

LEARN THESE SYMBOLS—CHECK THE MAP FOR CHANGES EACH TIME YOU REPORT. NOTIFY THE CLERK WHO MARKS THE MAP OF ANY MISSING SYMBOLS. DO NOT TOUCH THE MAP.



***Typical Direction Signs***

## **DUTIES PRELIMINARY TO AN AIR ATTACK**

As it will be impossible for you to know to what part of your community you will be asked to deliver a message, it will be necessary for you to have a thorough knowledge of the streets, alleys, location of all department chiefs, air raid warden's posts, and fire stations. You probably know a great deal about the section in which you live and those passed through on your way to school or work. It will be necessary for you to study the unfamiliar sections too. Learn alternate routes to every possible place you might be sent. Learn to locate them at night. Learn to locate any place in your community at any time.

The tests that are conducted by your local Citizens Defense Corps will require that you efficiently do your part. You will carry out any mission given you as seriously and conscientiously as though an attack was actually being made.

Your vehicle must be kept in first class condition at all times and you should have spare parts, extra fuel, and/or lubricants. You should provide suitable clothing for all kinds of weather.

## WHEN THE ATTACK COMES

If you are not on duty, at the "first" alert you will immediately report to the post to which you are assigned, ready to work for an indefinite time. If you are on duty this warning should be your cue to make a final check of the map and your equipment and be ready to go to work.

## WHEN "ALL CLEAR" SOUNDS

You will remain on duty until properly relieved, after the "all clear" signal has been sounded. You must, of course, complete any mission that has been given you.

Be especially watchful for craters, piles of debris, tottering walls, fires, injured persons, etc. You must use extreme caution in going about your duties. Report to the nearest warden any unusual incident if there is time, but remember—*your mission* comes first.

Each warden must make reports of damage and casualties. The control center needs these in order to allot rescue parties, auxiliary police, and other forces. Such reports must be delivered promptly.

Because of your familiarity with your community, on occasions you will be required to guide parties to the scene of incidents. Rubble and gassed areas should be avoided and you must keep in mind the character of transportation planning your route.

## OTHER DUTIES

Messengers may be called on for:

Aiding in the evacuation of contaminated or destroyed sections.

Reuniting families after raids.

Collecting food, clothing, and bedding for use of residents of bombed-out areas.

Distributing of cigarettes and candy to passing troops.

Caring for mail for passing troops and war prisoners.

Performing tasks for wounded troops and civilians.

Distribution of Gas Masks.

Aiding or assisting other groups of the Civilian Defense Corps.

Duties such as enumerated above were performed by messenger groups at the time of the bombing and the attack on Rotterdam. The civil authorities credit them with alleviating much of the suffering that occurred.

## Messenger's Notes



# BLACKOUTS

Blackouts are ordered only on the authority of the War Department. A blackout may be ordered during any period when hostile forces are believed to be in the vicinity, whether or not enemy airplanes have been sighted.

**"Blacking Out"** a city means that light sources must be so hidden or dimmed that an enemy bomber will have difficulty in finding the target and lack aiming points such as main street intersections. Following are the general plans used.

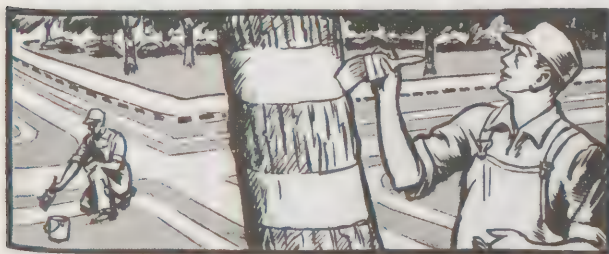
**Street Lights.** These are fitted with low-watt bulbs and covers that diffuse the light.

**Automobiles.** Headlights must be covered except for a small pair of slits and hooded.

**Traffic Lights.** Are treated the same way as automobile headlights.

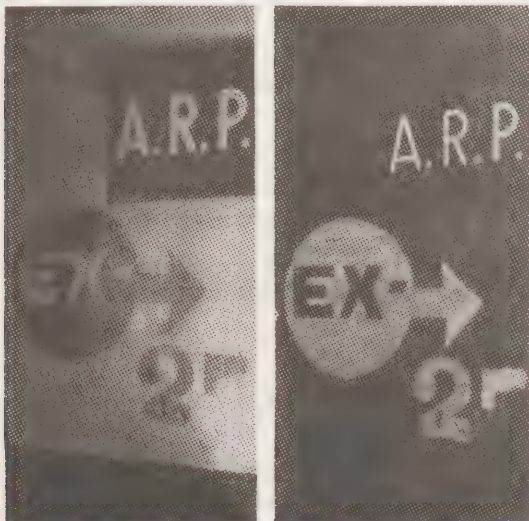
**Buildings.** Windows and doors must be covered with opaque materials. Paint on the glass, heavy curtains, light "baffles" or screens are some of the ways. No cracks of light must show.

**Aids to Seeing.** Since people have to move about during a blackout, the lack of light may be somewhat offset and safety promoted by—



1. Painting curbs, trees, poles and hydrants with white paint. There is a luminous paint, also, that gives off a faint blue light quite visible in total darkness.

2. Painting signs of luminous paint or making them of fluorescent material on which shines ultra-violet or "black" light or installing dimly lighted signs with horizontal screens to diffuse the light.



3. Painting white fenders and stripes around automobiles.

Members of the Citizens' Defense Corps who have outside duties during a blackout can be identified more easily if they wear a white cap or white-painted helmet; also a white belt fitted with crossed straps over the shoulders.



## ***Individual Conduct During a Blackout.***

Observe traffic rules. Keep to the right and remember the man or vehicle approaching *from* your right *has* the right of way.

If you must smoke, go into a hallway or covered place to strike the match. No smoking in the open is an even better rule. Make all crossings at intersections. It is hard for a driver to see you.

Be sure that everyone you know is acquainted with these simple rules.



**DO NOT** run when air raid warnings sound after dark during blackouts.



Use your flashlight as little as possible, if at all. **Never** point it upward.



Curb edges and direction signs painted white will help you find your way.



Keep pets on leash if you take them out after dark.



If an air raid warning sounds, get under cover, you may be hit by shell fragments.



If you don't know the neighborhood the first policeman or warden will tell you where to go



## ARMY

When an observer sights a group of hostile planes, he picks up his telephone (1) and says *Army Flash*. The Central Operator (2) at once connects him with the assigned Filter Center (3) to which he reports the type of planes, number, height, and direction of flight. When several reports agree, watchers transmit the data to an Information Center (4) where developments over a large area are plotted on a huge map.

Watching the map, Air Corps officers order interceptor planes into the air, (5) direct them to contact with the enemy; another officer notes the cities threatened and flashes a yellow, blue, or red alarm, according to the degree of danger, to the proper Warning District Center (6).

At this point, Civilian Defense takes over from the Air Corps, telephones the warnings to Control Centers (7) within the Warning District. And here the Commander of the local Citizens' Defense Corps orders the alert, has the public warning sounded usually short blasts on air horns, power horns or steam whistles or on the wailing sirens—and if the bombers arrive overhead, directs the operation of passive defense. Learn the air raid warning for your city.

## FLASH





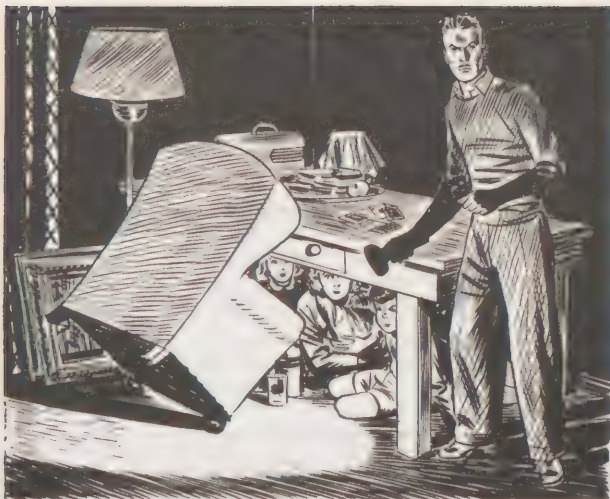


The Refuge Room

## WHAT TO DO IN AN AIR RAID

At the yellow warning, if you are not already on duty, you will be summoned to your post and will carry out orders until relieved. However, here are the rules for those who do not have assigned duties when the air raid warning comes. Memorize them carefully so that you can in turn instruct others. Here is what to tell them:

1. If away from home, seek the nearest shelter. Get off the street.
2. If you are driving, first park your car at the curb; be sure all lights are shut off.
3. If you are at home, send the others to the refuge room. This should be a comfortable place with as little window exposure as possible, equipped with drinking water, things to read, toilet facilities, a flashlight, a portable radio, a sturdy table, and food if you like.
4. Turn off all gas stove burners but leave pilot lights, water heaters and furnaces alone. Leave electricity and water on. Fill some large containers or a bathtub with water.
5. Check up on blackout arrangements. Don't let a crack of light show to the outside.



6. See that everyone's eyeglasses and dentures are in the refuge room. There should be additional warm garments for everyone, too.

7. Keep out of line of windows. Fragments and glass splinters cause most casualties.

8. If bombs fall nearby, get under a heavy table, an overturned davenport.

9. Don't rush out when the "all clear" signal sounds. Maintain the blackout. The Raiders may return.

10. Otherwise, keep cool; be sensible and set an example to others.

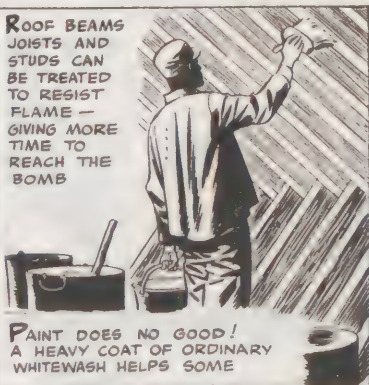
## FIRE DEFENSE

IT WILL BE VERY DIFFICULT TO FIGHT A MAGNESIUM BOMB UNLESS SOME WORK IS DONE BEFORE THE ATTACK



ALL FURNITURE TRUNKS AND JUNK OF ALL KINDS SHOULD BE REMOVED FROM ATTIC OR TOP FLOOR!

ROOF BEAMS JOISTS AND STUDS CAN BE TREATED TO RESIST FLAME — GIVING MORE TIME TO REACH THE BOMB



PAINT DOES NO GOOD! A HEAVY COAT OF ORDINARY WHITEWASH HELPS SOME



# HOW THE MAGNESIUM BOMB WORKS

**THE MOST EFFECTIVE INCENDIARY BOMB MADE SO FAR IS THE MAGNESIUM BOMB**



LENGTH, ABOUT 14" WEIGHT, 2.2 POUNDS

**A LARGE BOMBER CAN CARRY 1000 SUCH BOMBS!**



**THEY ARE USUALLY RELEASED 20 TO 50 AT A TIME, SPREAD LIKE SHOT BEFORE STRIKING.**

**DROPPED FROM A HEIGHT OF 20,000 FEET, THEY DEVELOP ENOUGH FORCE TO PENETRATE AN AVERAGE ROOF...**



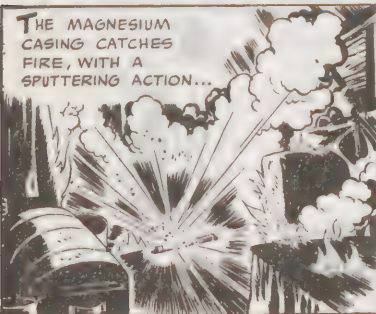
**...THUS, THEY USUALLY START BURNING IN A TOP STORY OR ATTIC**

**THE THERMITE FILLING OF IRON OXIDE AND FINELY DIVIDED ALUMINUM IS THEN IGNITED AND DEVELOPS A FIERCE HEAT OF OVER 4500 DEGREES!**



**THE FLAME ROARS OUT OF THE ESCAPE HOLES.**

**THE MAGNESIUM CASING CATCHES FIRE, WITH A SPUTTERING ACTION...**



**...FLAMING MOLTEN METAL IS THROWN ABOUT AND SURROUNDING INFLAMMABLE MATERIAL CATCHES FIRE**

**IF NOT QUICKLY QUENCHED, THE BOMB WILL BURN THROUGH THE FLOOR, SETTING ADDITIONAL FIRES ON THE FLOOR BELOW...**



**BUT, WITH PROMPT ACTION AND SIMPLE TOOLS, A MAGNESIUM BOMB CAN BE QUENCHED!**

# CONTROLLING WITH WATER

TO FIGHT A BOMB WITH WATER, YOU NEED TWO MEN AND SPECIAL EQUIPMENT. REMEMBER, YOU CAN'T PUT OUT THE BOMB — YOU FEED IT WATER, TO BURN OUT!

ONE MAN PUMPS 80 STROKES A MINUTE TO KEEP A STRONG ENOUGH PRESSURE TO THROW A JET 30 FEET, AS SPRAY, 15 FEET. ONE MAN FIGHTS THE FIRE.

YOU USE UP A BUCKET IN 1½ MINUTES

SPECIAL DOUBLE ACTION PUMP WITH 30 FEET OF HOSE AND SPECIAL NOZZLE NEEDED.



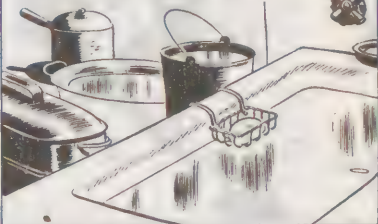
SPRAY ON BOMB

A THIRD PERSON IS MOST USEFUL TO CHECK OTHER POINTS FOR FLAME REPLENISH WATER AND RELIEVE PUMPER.

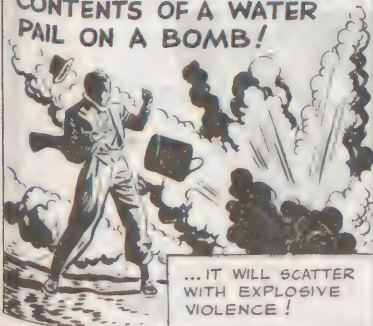


AMPLE STORAGE OF WATER SHOULD BE PROVIDED IN ADVANCE, AS WATER MAINS MAY BE BROKEN BY HIGH EXPLOSIVES AND PRESSURE LOST! FILL THE TUB, EXTRA PAILS AND DON'T FORGET IN A PINCH —

THE CONTENTS OF HOT WATER OR HEATING BOILERS!



NEVER THROW THE CONTENTS OF A WATER PAIL ON A BOMB!



IF CONTROL OF THE BOMB SEEMS DOUBTFUL, HAVE AN ALARM TURNED IN, BUT CONTINUE FIGHTING THE BOMB UNTIL HELP ARRIVES OR SUPPLIES ARE EXHAUSTED!



1 LEARN NOW HOW TO CALL

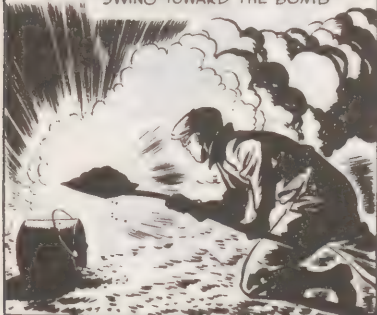


2 LEARN NOW LOCATION OF NEAREST ALARM...

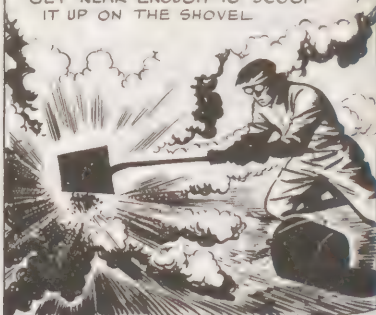
MILTON CANIFF

# CONTROLLING WITH SAND

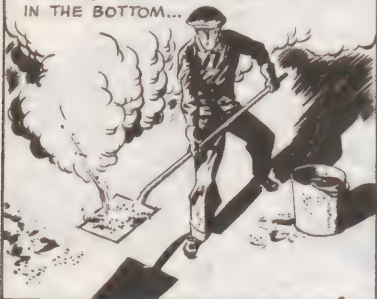
APPROACH THE BOMB IN A CROUCHING OR CRAWLING POSITION. PLACE THE SAND BUCKET, UPSET, TO ALLOW A FULL-ARM SWING TOWARD THE BOMB



TRY TO COVER THE BOMB WITH DRY SAND, TO CONFINE IT'S ACTION, SO THAT YOU CAN GET NEAR ENOUGH TO SCOOP IT UP ON THE SHOVEL



WHEN THE BOMB IS UNDER FAIR CONTROL, SCOOP IT UP ON THE SHOVEL, FIRST RIGHTING THE BUCKET, BUT LEAVING SOME SAND IN THE BOTTOM...



...IF THE BOMB CAN BE DROPPED FROM A WINDOW TO SOME PLACE WHERE IT CAN BURN OUT WITHOUT HARM —

**GET RID OF IT THAT WAY!**



... OTHERWISE, PUT IT IN THE BUCKET ON TOP OF SAND, COVER IT WITH MORE SAND...



... THEN, HOLDING THE BUCKET ON THE SHOVEL, CARRY IT OUT OF THE HOUSE...







## ABOUT FIRE EXTINGUISHERS

Many houses and public buildings have fire extinguishers. They will be as useful as ever in putting out fires caused by an incendiary bomb. For putting out the bomb itself, the extinguisher may not be suitable.

Read the label. If it says that the contents include **CARBON TETRACHLORIDE**, it cannot under any circumstances be used on a magnesium bomb. It is not only ineffective, it may cause dangerous gas to be generated. After the bomb is burnt out, use it on any remaining fire.

All water-type extinguishers are suitable. If the label says **SODA-ACID**, that's simply a means of creating pressure in the extinguisher. Turn it upside down, use it. You can get a spray effect by putting the thumb over the nozzle, use the jet on surrounding fires. However, *one extinguisher is not enough to burn out a magnesium bomb.* And you cannot refill the extinguisher.

It is best to have sand or pump-bucket equipment handy, use them on the bomb, and save the extinguishers for resulting fires.



A foam extinguisher will also help to control a bomb, but one extinguisher load will not finish the job.

See that the extinguishers you know about are ready for use.

# CHEMICAL WARFARE AGENTS




























## REFERENCE AND TRAINING CHART

LEGEND

			
HOSPITAL CASE	FIRST AID STATION	LUNG PROTECTION NEEDED	COMPLETE PROTECTION NEEDED

The importance of proper first aid for gas victims cannot be overemphasized. The following are general rules which apply in all cases.

- Act promptly and quietly; be calm.
- Put a gas mask on the patient if gas is still present or, if he has a mask on, check to see that his is properly adjusted. If a mask is not available, wet a handkerchief or other cloth and have him breathe through it.
- Keep the patient at absolute rest; loosen clothing to facilitate breathing.
- Remove the patient to a gas-free place as soon as possible.
- Summon medical aid promptly; if possible, send the victim to a hospital.
- Do not permit the patient to smoke, as this causes coughing and, hence, exertion.

CLASS	NAMES AND SYMBOLS	FORM	ODOR	PERSISTENCE	TACTICAL CLASS	PROTECTION	FIRST AID <small>[After removal from exposed area]</small>	PHYSIOLOGICAL EFFECT
VESICANTS	MUSTARD <small>HS-CHL<sub>2</sub>TEL, S-TEL</small>	LIQUID AND VAPOR	 Sulfur, Mercaptan, Mustard	One day to one week Longer if dry or cold			Address; remove fluid mustard with protective ointment, bleach paste, or kerosene; bathe; wash eyes and nose with soda solution.	Delayed effect. Burns skin or membrane. Inflammation respiratory tract, leading to pneumonia. Eye irritation, conjunctivitis.
	LEWISITE <small>CL-LEWISITE, CL-LEWISITE</small>	LIQUID AND VAPOR	 Arsenic	One day to one week Longer if dry or cold			Address; remove liquid Lewisite with hydrogen peroxide, 1% in glycerine, or kerosene; bathe; wash eyes and nose with soda. Rest—Doctor.	Burning or irritation of eyes, nasal passages, respiratory tract, skin. Aggravates person.
IRRITANTS	CHLOROPICRIN <small>HYPERCHLORIC ACID</small>	GAS	 Peppery odor	Up to 6 hours Woods 12 hours			Wash eyes, keep quiet and warm. Do not use bandages.	Causes severe coughing, crying, vomiting.
	DIPHOSGENE <small>TEL-DIPHOSGENE, TEL-DIPHOSGENE</small>	GAS	 Evangelical	30 minutes			Keep quiet and warm. Give coffee as a stimulant.	Causes coughing, breathing hurts, eyes water later.
LACRIMATORS	PHOSGENE <small>CL-TEL, CL-TEL</small>	GAS	 Bitter, like, Sweet soap	18 to 30 minutes			Keep quiet and warm, bed rest. Coffee as a stimulant. Loosen clothing, no alcohol or cigarettes.	Irritation of lungs, occasional vomiting, tears in eyes, dazed feeling. Occasionally symptoms delayed. Later, collapse, heart failure.
	CLORACETOPHENONE <small>C-TEL, CO-TEL, CL</small>	GAS	 Apple blossoms	10 minutes			Wash eyes with cold water or boric acid solution. Do not bandage. Face wind. For skin relief, slightly soother.	Makes eyes smart. Short tightly. Tears flow. Temporary.
STERNUTATORS	BROMBENZYL CYANIDE <small>C-TEL, BR-TEL</small>	GAS	 Sweet fish	Several days (Effects in water)			Wash eyes with boric acid. Do not bandage.	Eyes smart, shut, tears flow. Effect lasts some time. Headache.
	ADAMSITE <small>(C-TEL), AD-TEL</small>	GAS	 Earl Sauer	10 minutes			Keep quiet and warm. Loosen clothing. Sprinkle nose with soap suds or stiff brushing powder. Aspirin for headache.	Causes sneezing, skin depressed feeling, headache.
	DIPHENYLCHLORARSINE <small>(C-TEL), -AS-TEL</small>	SMOKE	 Dust in eye	Summer 10 minutes			Remove to pure air, keep quiet. Use kerosene powder bottle.	Causes skin itching and headache.

# WAR GASES

---

## ***General Notes.***

War "Gases," or chemical agents used to produce casualties, are surprise weapons. As this is written, they have not been used against the British or others trained to protect themselves. They have been used against the Ethiopians and the Chinese.

A gas-tight room suitably located offers fair protection against any probable concentration of war gas in a city. For those whose duties take them into the streets a gas mask offers full protection against all but the "blister gases" (liquid vesicants). To enter areas where mustard or lewisite is present, full protective clothing is needed.

War gases may be dropped in bombs or simple containers and liquid vesicants may also be sprayed by airplanes.

The gas warning is a "percussion sound"—that is, bells, drums, hand rattles, rapidly struck resonant objects of any kind. If the presence of gas is suspected, report to the nearest warden. Do not shout if distant gas alarms are heard. The danger is local and the spreading of an alarm must be left to the wardens.

The notes on the following pages are simply for reference for those who have received instruction in protection against gas. Reading them will not by itself make you an expert in gas defense.



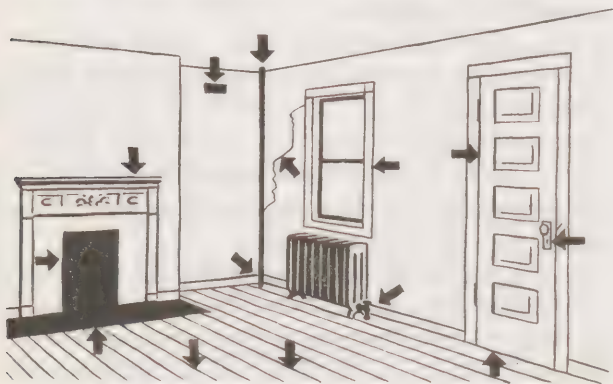
# THE GAS-TIGHT ROOM

War gases hug the ground, flow into cellars and basements. Upper floors of a dwelling are away from dangerous concentrations. If all openings and cracks are closed, a room three stories from the ground will offer good protection against war gases.

To stop cracks and small openings, tape of various kinds may be used. A mush made by soaking newspapers in water or patching plaster may be used for caulking larger openings. A piece of wall board, nails and caulking material may be kept handy to cover a window broken by the blast of high explosives.

One door may be used as an entrance by fastening over it a blanket in such a way as to seal it tightly when no one is going in or out. If soaked in oil to close the air spaces, the blanket is more effective.

Store necessary supplies in such a room—food, water, chairs, a battery-operated radio, flashlight and by all means provide some sort of toilet facilities use it as the refuge room.



Allow 20 square feet of floor space for each person who is to occupy an average room with a ceiling nine feet high. This will give enough air to occupy the room 10 hours.

The illustration shows where to stop up cracks, how to hang the blanket at the entrance door.

## ***“Blister Gases”***

### ***and Decontamination.***

Lewisite and mustard “gas” are liquids in the normal state. They give off a dangerous vapor that acts as a war gas and unless chemically neutralized may persist for a week, contaminating the air for a considerable distance down wind.

Full protection against these chemical agents is afforded by gas-proof clothing, covering the wearer from top to toe and tightened at wrists and ankles. The greatest care must be used in undressing after exposure to lewisite or mustard and this is done at personnel decontamination stations, where vesicant casualties are also taken for first aid.

Decontamination of streets, walls, and buildings is effected principally by means of chloride of lime (bleaching powder) freshly mixed with earth and water as a slurry or paste. It must be thoroughly worked into cracks and crevices and the resulting product flushed away. This work is done by the decontamination squads.

The liquid vesicants are very penetrating and ordinary shoes or clothing offer no protection. Do not go into the streets after a gas alarm has been sounded except on direction of the Warden.

RANK DESIGNATION	▲	▲ ▲	▲ ▲ ▲	▲ ▲ ▲ ▲	△	△ △	△ △ △	★	★ ★	★ ★ ★	★ ★ ★ ★	★ ★ ★ ★ ★
AIR RAID WARDEN	FIRST CLASS	SENIOR OR SECTOR WARDEN		ZONE LEADER	GROUP LEADER	CHIEF WARDEN	STATE WARDEN	NO OTHER RANKS				
AUXILIARY FIREMEN	"	SQUAD LEADER	PLATOON LEADER		COMPANY LEADER	FIRE CHIEF	STATE FIRE COORDINATOR	NO OTHER RANKS				
AUXILIARY POLICEMEN	"	"	"		"	CHIEF OF POLICE	NO OTHER RANKS					
BOMB SQUADS	"	"	NONE		"	"	NO OTHER RANKS					
RESCUE SQUADS	"	"	DEPOT LEADER		"	FIRE CHIEF	NO OTHER RANKS					
MEDICAL FIELD UNITS	"	TEAM LEADER	SQUAD LEADER		UNIT LEADER	CHIEF OF E M S	STATE MEDICAL DIRECTOR	NO OTHER RANKS				
MEDICAL AUXILIARIES (stretcher teams)	"	"	"	*	NO OTHER RANKS							
NURSES' AIDES		NO RANK DESIGNATIONS										
EMERGENCY FOOD AND HOUSING	FIRST CLASS	UNIT LEADER	DEPOT LEADER		COMPANY LEADER	CHIEF WARDEN	NO OTHER RANKS					
DRIVERS UNITS	"	CONVOY LEADER	"		"	NO OTHER RANKS						
MESSENGERS	"	SENIOR MESSENGER	PLATOON LEADER		"	NO OTHER RANKS						
ROAD REPAIR CREWS	"	CREW LEADER	DEPOT LEADER		"							
DEMOLITION AND CLEAR.	"	"	"		"	CHIEF OF EMER. WORK S	NO OTHER RANKS					
DECONTAMINATION SQUADS	"	SQUAD LEADER	STATION LEADER		"							
FIRE WATCHERS	"	NO OTHER RANKS										
REPAIR CREWS	"	CREW LEADER	SERVICE LEADER		NONE	CHIEF OF UTILITIES	NO OTHER RANKS					
LOCAL STAFF	"	AS REQUIRED			STAFF UNIT LEADER	CONTROLLER	COMMANDER	COORDINATOR	NO OTHER RANKS			
STATE STAFF	"	AS REQUIRED				AS DESIGNATED	AS DESIGNATED	ASST. COORDINATOR	COORDINATOR	NO OTHER RANKS		
U. S. STAFF	"	AS REQUIRED					AS DESIGNATED	AS DESIGNATED	AS DESIGNATED	REGION DIRECTOR PRINCIPAL ASSO'S	U. S. DIRECTOR	
EQUIVALENT ARMY TERM	PVT 1st CLASS	NON-COMM OFF	LIEUTENANT	CAPTAIN	MAJOR	COLONEL	BRIG GEN.	MAJ GEN	LIEUT. GEN	GENERAL		

\* ASSIGNED BY RED CROSS TO CHIEF OF EMERGENCY MEDICAL SERVICE

# CITIZENS' DEFENSE CORPS

The team of trained civilian services organized to operate the passive defense is known as the Citizens' Defense Corps. It includes regular forces of the city—police, firemen, welfare workers, sanitation men—as well as volunteers. It operates as a unit under the local Defense Coordinator.

## *Staff.*

The Citizens' Defense Corps is headed by a Commander assisted by a staff. His second in command is the Executive Officer. There are others who operate the control center and the communications, account for personnel and property and assign transportation. The Chiefs of the Fire and Police Departments assist him in the passive defense. There is a Chief Air Raid Warden, a Chief of Emergency Medical Services, and others who control groups of the enrolled volunteers. Learn the organization of the Citizens' Defense Corps in your community.

## ***Enrolled Volunteer Services of The Citizens' Defense Corps.***



Air Raid Wardens are in complete charge of a sector containing the homes of about 500 people. To them the warden is the embodiment of all Civilian Defense.



Auxiliary Firemen assist the regular fire-fighting forces.



Auxiliary Policemen assist the police department in enforcing blackout restrictions, in traffic control, and in guard duties.



Bomb Squads are specially trained squads of police to handle and dispose of time bombs and duds.



Rescue Squads are trained crews of about 10 men each with special equipment to rescue the injured from debris.



Medical Forces consist of first-aid parties and stretcher squads and personnel at casualty clearing stations. Members of these forces are doctors, trained nurses, and assistants.



Nurses' Aides assist nurses. They have special Red Cross Training.



Emergency Food and Housing Corps members provide welfare services to the needy and homeless.



Drivers Units consist of emergency drivers of vehicles used by the Civilian Defense services.



Messengers carry supplies, dispatches, and messages wherever needed.



Road Repair Crews restore normal flow of traffic as quickly as possible. Utility repair men work with these crews and with demolition squads.



Demolition and Clearance Crews remove rubble, fill bomb craters, and remove unsafe walls or parts of buildings.



Decontamination squad members are specially trained to treat clothing and equipment as well as streets and walls contaminated by war gas.



Fire Watchers must spot and combat incendiary bombs.



# A MANUAL OF DRILL

for the

## CITIZENS' DEFENSE CORPS

*Adapted from the Basic Field Manual of the  
United States Army*

Basic drill is required of a volunteer for award of the insigne. Drill for units of the Citizens' Defense Corps, moreover, is recommended as it helps to coordinate the work of individuals under a single command. The purposes of drill are:

- 1 To enable a leader to move his unit from one place to another in an orderly manner.
- 2 To aid in disciplinary training by instilling habits of precision and response to the leader's orders.
- 3 To provide a means, through ceremonies, of enhancing the morale; develop a spirit of cohesion; and give an interesting spectacle to the public.
- 4 To give leaders practical training in commanding volunteers.

*Drills should be frequent, intensive, and of short duration.*



## ***General.***

A normal squad of volunteers contains 12 men or 12 women, all of one service. It consists of a leader, an assistant leader, and other personnel. As far as practicable, the squad is kept intact. The usual formation of the squad is a single rank or single file. This permits variations in the number of men composing the squad.

## ***To Form the Squad.***

The command is; **FALL IN.** At the command **FALL IN** the squad forms in line as shown. Squad leader on the squad's extreme right, assistant leader on the squad's extreme left.

To secure uniformity, the tallest leader is put in charge of the first squad, the second tallest in charge of the second squad, etc. Assistant

**Fig. I—A Squad in Line**

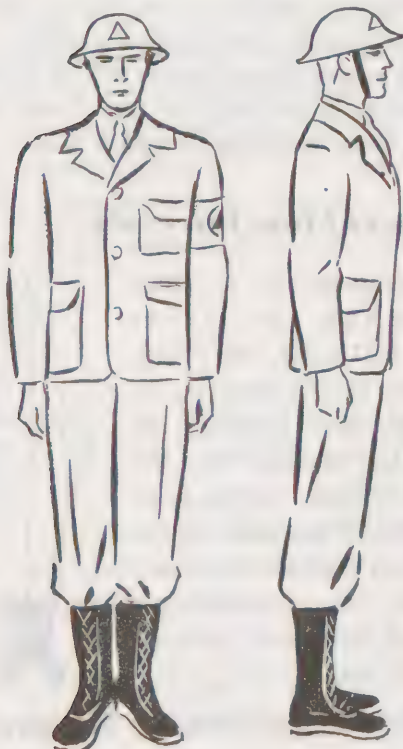


leaders are similarly arranged. Other volunteers are placed according to height beginning with the tallest being placed next to the leader.

On falling in, each man except the one on the left extends his left arm laterally at shoulder height, palm of the hand down, fingers extended and

joined. Each man, except the one on the right, turns his head and eyes to the right and places himself in line so that his right shoulder touches lightly the tips of the fingers of the man on his right. As soon as proper intervals have been obtained, each man comes to attention, drops his arm smartly to his side and turns his head to

**Fig. II—A Volunteer at Attention**



the front, heels are together, feet forming a right angle; knees are straight without stiffness, hips level and drawn back slightly, body erect and resting equally on hips, chest lifted and arched, shoulders square and falling equally. Arms hang straight down without stiffness with the back of the hands out, fingers held naturally. Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical, eyes straight to the front. The weight of the body rests equally on the heels and the balls of the feet. In assuming the position of attention the heels are brought together smartly and audibly.

(Leaders and assistant leaders will be appointed under authority defined by the Chief of the Service of which the squad forms a part.

### ***To Form at Close Intervals.***

The commands are: At Close Interval, **FALL IN**. At the command **FALL IN**, the volunteers fall in as described above, except that close intervals are obtained by placing the left hands on the hips. In this position the heel of the palm of the hand rests on the hip, the fingers and thumb are extended and joined, and the elbow is in the plane of the body.



**Fig. III—A Volunteer Falling in at Close Interval**

## ***To Aline the Squad.***

If in line, the commands are: Dress Right, DRESS, Ready, Front. At the command DRESS, each man except the one on the left extends his left arm (or if at close interval, places his left hand upon his hip), and all aline themselves to the right. The instructor places himself on the right flank one pace from and in prolongation of the line and facing down the line. From this position he verifies the alinement of the men, ordering individual men to move forward or back as is necessary. Having checked the alinement, he faces to the right in marching and moves three paces forward, halts, faces to the left and commands: Ready, FRONT. At the command FRONT, arms are dropped quietly and smartly to the sides and heads turned to the front.

## ***Rests.***

Being at a halt the commands are: FALL OUT, REST, AT EASE, and PARADE REST.

At the command FALL OUT, volunteers leave the ranks but are required to remain in the immediate vicinity.

At the command REST, one foot is kept in place. Silence and immobility are not required.

At the command AT EASE the right foot is

kept in place. Silence but not immobility is required.

At the command of execution **REST** of Parade **REST**, move the left foot smartly 12 inches to the left of the right foot keeping the legs straight so that the weight of the body rests equally on both feet. At the same time, clasp the hands behind the back, palms to the rear, thumb and fingers of the right hand clasping the left thumb without constraint; preserving silence and immobility.

Being at any of the rests except **FALL OUT**, to resume the position of Attention, the commands are Squad (or other unit being commanded) **ATTENTION**. At the command **ATTENTION** take that position in your squad.

### ***Eyes right (left).***

The commands are: Eyes (Preliminary Command), **RIGHT** (Command of Execution) (**LEFT**) Ready **FRONT!** At the command **RIGHT**, each man turns his head and eyes to the right. At the command **FRONT** the head and eyes are turned to the front.

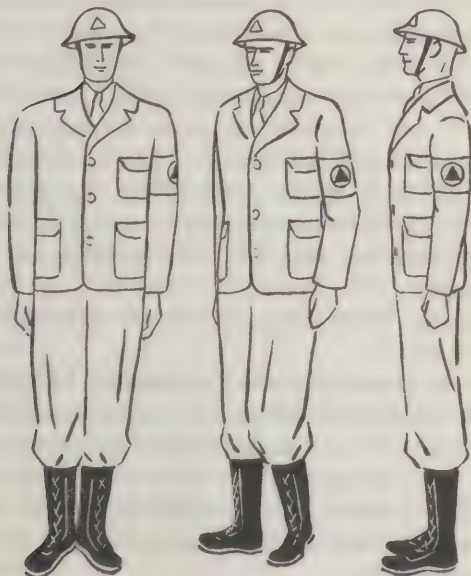
## ***Facings.***

*(All Facings are executed at the halt.)*

*To the flank.*—The commands are **Right (Left) FACE**. At the command **FACE**, slightly raise the left heel and the right toe: Face to the right, turning on the right heel, assisted by a slight pressure on the ball of the left foot. Next, place the left foot beside the right. Exercise **Left FACE** on the left heel in a corresponding manner.

*To the rear.*—The commands are: **About FACE**. At the command **FACE**, carry the toe of the right foot a half-foot length to the rear and slightly to the left of the left heel without changing

**Fig. IV—Executing Right FACE**





the position of the left foot; weight of the body mainly on the heel of the left foot; right leg straight without stiffness. (TWO) Face to the rear turning to the right on the left heel and on the ball of the right foot, place the right heel beside the left.

### ***Steps and Marchings.***

All steps and marchings executed from the halt, except right step, begin with the left foot.

***Quick Time:*** Being at a halt, to march forward in quick time, the commands are: Forward MARCH. At the command Forward, shift the weight of the body to the right leg without perceptible movement. At the command MARCH, step off smartly with the left foot and continue the march with steps taken straight forward without stiffness or exaggeration of movements. Swing the arms easily in their natural arcs, 6 inches to the front and 3 inches to the rear of the body. To halt when marching in quick time, the commands are: Squad HALT. At the command HALT, given as either foot strikes the ground, execute the halt in two counts by advancing and planting the other foot and then bringing up the foot in rear.

To Mark Time the commands are; Mark-Time, MARCH.

Being in march at the command MARCH, given as either foot strikes the ground, advance and plant the other foot, bring up the foot in rear, placing it so that both heels are on line and continue the cadence by alternately raising and planting each foot. The feet are raised 2 inches from the ground.

Being at a halt, at the command MARCH, raise and plant first the left then the right as prescribed above.

The halt is executed from mark time as from quick time.

*Half Step.*—The commands are: Half Step MARCH. At the command MARCH, take steps of 15 inches in quick time. To resume the full step from the half step or mark time the commands are: Forward MARCH.

*Side Step.*—Being at a halt the commands are: Right (Left) Step MARCH. At the command MARCH, carry the right foot 12 inches to the right, place the left foot beside the right, left knee straight. Continue the cadence of quick time. (The side step is executed in quick time from the halt and for short distances only.)

*Back Step.*—Being at a halt the commands are, Backward MARCH. At the command MARCH, take steps, beginning with the left foot, 15 inches straight to the rear.

*To March to the Flank.*—Being in march the commands are: By The Right (Left) Flank—MARCH. At the command MARCH, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) in marching and step off in the new direction.

*Oblique March.*—Being in march the commands are Right (Left) Oblique—MARCH. At the command MARCH, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) oblique in marching and step off in the new direction.

To resume the original direction, the commands are—Forward, MARCH. At the command MARCH each individual faces half left (right) in marching then moves straight to the front.

*Change Step.*—The commands are Change Step, MARCH. Being in march at quick time, at the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, plant the toe of the right foot near the heel of the left and step off with the left foot. (Execute the change on the right foot similarly, the command MARCH being given as the left foot strikes the ground.)

*To the Rear.*—To face to the rear in marching, being in march, the commands are: To The Rear, MARCH. At the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, turn to the right about on the balls of both feet and immediately step off with the left foot.

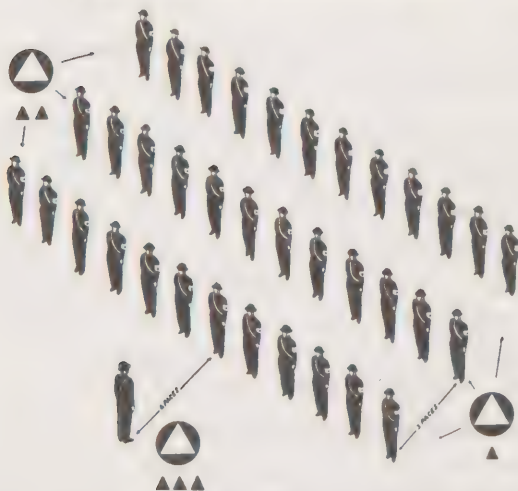
*Other Marchings.*—March other than at Attention. The commands are: Route Step, MARCH or At Ease, MARCH. Route Step MARCH, at the command MARCH Volunteers are not required to march at attention or to maintain silence. At Ease, MARCH is the same as Route Step, MARCH, except that Volunteers will maintain silence.

*Dismissing the Squad.*—The unit being at a halt the leader calls the unit to attention, if they are not at attention, from a point six paces in front of the center of the unit. He then will give the command—DISMISSED. Volunteers are then free to go and do as they please until the next regularly scheduled drill period.

## ***Forming the Platoon.***

To form the platoon, which consists of 3 squads—the command, FALL IN will be given by the senior leader facing the area on which he wishes the platoon to form. At this command the unit will form facing the leader with its center 6 paces to his front in 3 parallel lines (each of these lines constitutes a squad). (Should there be insufficient men to form 3 complete squads, skeleton squads of as near equal number as possible will be formed in 3 ranks, squad leaders placing themselves directly behind one another.)

**Fig. V.—A Platoon in Column of Squads**



*From this formation the unit can march; forward, to the right, or to the left.*

## **Platoon Movements.**

At the command: Forward MARCH, each man steps off with his left foot directly to his own front preserving his relative position and so regulates his step that the ranks remain parallel to his original front.

At the command: Right (Left) FACE Forward MARCH, the unit executes a right face on the heel of the right foot and ball of the left foot at the word FACE and at the word MARCH they step off with their left foot as in moving to the front. (Left face is performed by turning on the heel of the left foot and the ball of the right foot.) In the movements to the right or left the commander of the unit takes a position three paces in front of the left file of his command, at double time if necessary.

Being in a column to change direction the commands are—Column Right (Left) MARCH. At the command MARCH, given as the right (left) foot strikes the ground the first man of the leading element on the right (left) advances one step and then steps off in the new direction using half steps until the men to his left (right) are abreast of him. Full step is then resumed.

*Close Interval—Normal Interval.*—Being in column of threes at normal interval between squads to March or form at Close Interval, the commands are: Close, MARCH. At the command MARCH, the squads close to the center by

obliquing until the interval between men is 4 inches. The center squad take up the half step until the dress has been regained.

If this movement is executed from the halt, the squads close toward the center by executing Right or Left Step until 4-inch intervals are reached.

Being in column of threes at close interval between squads to March or form at Normal Interval, the commands are: Extend, MARCH. At the command MARCH, the squads open to the right and left from the center by obliquing until the normal interval is regained.

If this movement is executed from the halt, the squads Right or Left Step until normal interval is regained.

*Change Direction.*— Being in column of threes to change direction, the commands are: Column Right (Left) MARCH. The right flank man of the leading rank is the pivot. At the command MARCH, given as the right foot strikes the ground, the right flank man of the leading rank faces to the right in marching and takes up the half step until the other men of his rank are abreast of him, then he resumes the full step. The other men of the leading rank oblique to the right in marching without changing interval, place themselves abreast of the pivot man, and conform to his step. The ranks in rear of the leading rank execute the movement on the same ground and in the same manner as the leading rank.



## **Fig. VI**

### ***Forming the Citizens' Defense Corps for Parade***

(Services will form and move as platoons)

●	Mayor, Defense Coordinator and Dignitaries.
□	Commander, C. D. C.
▬	Staff.
▬	Messengers.
▬	Drivers.
□	Fire Department Chief.
▬	Auxiliary Firemen.
▬	Rescue Squads.
□	Police Department Chief.
▬	Auxiliary Police.
▬	Bomb Squads.
□	Colors.
□	Warden Service Chief.
▬	Air Raid Wardens.
▬	Fire Watchers.
▬	Emergency Food Housing Units.
□	Medical Service Chief.
▬	Medical Field Units.
▬	Nurses' Aides Corps.
□	Public Works Service Chief.
▬	Demolition and Clearance Crews.
▬	Road Repair Squads.
▬	Decontamination Corps.



**OFFICE OF CIVILIAN DEFENSE**  
**WASHINGTON, D. C.**  
**OFFICIAL BUSINESS**

**PENALTY FOR PRIVATE USE TO AVOID  
PAYMENT OF POSTAGE, \$300**

*A Handbook for*  
**AIR RAID  
WARDENS**



**United States**  
**OFFICE OF CIVILIAN DEFENSE**  
*Washington, D. C.*



*A Handbook for*

# AIR RAID WARDENS



Prepared by Training Section

## OFFICE OF CIVILIAN DEFENSE

Revised Edition

U. S. Government Printing Office, December 1941, Washington, D. C.



***This Book Belongs to:***

-----  
(First name)

-----  
(Initial)

-----  
(Last name)

***My Home Address Is:***

-----  
-----  
***My Telephone Number Is:***

-----  
***I am ----- Warden of***

***Post No. -----, City of -----***

***State of -----***

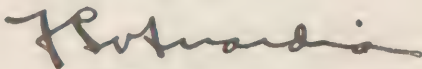
***In case of emergency, notify:***

# PREFACE

This is one of a series of civilian defense handbooks prepared by the United States Office of Civilian Defense. The purpose of each handbook is to instruct the individual enrolled civilian defense worker in his duties, and to serve as a manual for reference.

The measures for safeguarding civilians against the effects of air attack, which are described in the following pages, have become a necessary part of the defensive organization of any country open to air attack.

Every State and municipality should take such legal or administrative action as may be necessary to provide for the organization, direction, and training of its Air Raid Warden Service.



F. H. LaGuardia,  
*U. S. Director Civilian Defense.*

Washington, D. C.  
*August 25, 1941.*

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***A Handbook for***

# **AIR RAID WARDENS**



## ***Chain of Command for Wardens.***

In a local plan of Civilian Defense, the Air Raid Warden Service may be set up under the Chief of Police or as an independent group. In either case, there will be a Chief Air Raid Warden and the number of administrative links will depend upon the size of the city or cities under the Local Defense Organization.

The basic unit of Civilian Defense is a *Sector* containing the homes of about 500 people. This is controlled by a Warden's Post, staffed by a Senior Warden and three or more Assistant Wardens.

In general, from 4 to 15 Posts are grouped under a Precinct Warden. In smaller cities, they will report directly to the Chief Warden; in larger cities it will be desirable to group Precincts under Zone Wardens.

*Fill out names and addresses in the form on the following page.*

**ADMINISTRATIVE OFFICERS, AIR  
RAID WARDEN SERVICE**

This post No. ----- City -----

Senior Warden -----

Address -----

Telephone ----- Alternate phone -----

This post reports to precinct No. -----

Zone or Precinct Warden -----

Address -----

Telephone ----- Alternate phone -----

Chief Warden of city -----

Address -----

Telephone -----

*Note.—The above form is for administrative use  
and does not represent the communication system  
for use during air raids. See pages 16-18.*

## ***The Air Raid Warden's Post.***

The basic unit of Civilian Defense against air attack is a Sector containing the homes of about 500 people. Its extent will depend on the character of the homes. One apartment house may easily accommodate 500 people. Where detached houses are the rule, a number of blocks or squares may form a Sector.

*On the following page, draw a map of your Sector, putting in the names of all the streets, marking the limits of your Sector with a heavy line.*

In each Sector is a Warden's Post. This may be a single room or suite of rooms or a fitted-up cellar. It must be large enough to serve as a point of assembly for all Wardens of the Sector together with messengers and any other personnel assigned. As a message center, it should afford protection from bomb blast and splinters and should be sealed against war gas. In congested districts, Air Raid Wardens' Posts may be grouped in larger quarters, provided no Warden must travel more than five to eight blocks or squares from that point to cover his district.

The Warden's Post must be plainly marked for the public and small signs should be placed at various points within the Sector to show how to reach it. Luminescent signs made with special paint or fluorescent signs activated by black light are visible during a blackout to persons nearby. Such signs are desirable.

*Mark on the map the location of your Air Raid Warden's Post.*

## ***Number of Wardens.***

Each Air Raid Warden's Post must have from three to six Wardens. The exact number depends



[illegible]

At each Post, there will be a Senior Warden and other Wardens assigned as Second Warden.

**Third Warden, and Fourth Warden.** The Command of the Post will succeed in that order.

In addition, for each building in the Sector housing more than 100 people, in residence or at work, there will be a Building Warden. He will concern himself only with matters pertaining to his own building and will act under the direction of the Senior Warden of the Sector.

In the case of factories large enough to have special Defense Organizations, the remarks as to Building Wardens do not apply. The head of a factory organization has a status similar to a Senior Warden of a Post.

*Mark on the map the position of all buildings requiring special Building Wardens.*

## ***Equipment of Air Raid Warden's Post.***

### ***Post Equipment.***

Each Post should be equipped with:

Desk and sufficient chairs for all personnel.

Telephone and other communication devices as adopted locally.

Large flashlights and extra batteries.

First aid kit and solutions.

Gas alarm devices.

Gas detection devices (as available).

A log book or diary for recording daily occurrences.

Prescribed report forms.

Set of required instructions, pamphlets, and texts.

Typewriter.

Battery-operated radio.

Toilet facilities.

Rope or clothesline, stands and signs for roping off danger areas.

### *Warden's Equipment.*

Each Air Raid Warden should be equipped with:

Arm band or suitable uniform.

Steel helmet (when available).

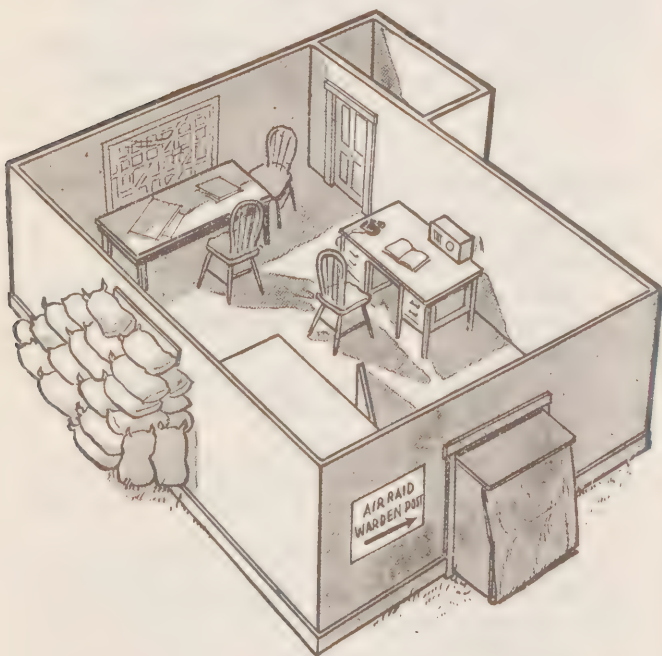
Gas mask (when available).

Gas-protective clothing (as available).

Warden's whistle.

Heavy work gloves.

### *Office Lay-out.*



*Here is a typical office lay-out. Note gas-proof door, sandbags protecting windows from bomb blast, and storage space.*

## ***Your Duties as Air Raid Warden.***

You have been chosen as Air Raid Warden of your Sector because you are known to be reliable and responsible and because you have the needed qualities to lead, direct, and help the people entrusted to your care.

In your Sector are the homes of some hundreds of your friends and neighbors. It will be your responsibility to see that everything possible is done to protect and safeguard those homes and citizens from the new hazards created by attack from the air or by enemies from within our gates.

As an Air Raid Warden you have specific duties to perform. You must study them, review them, practice them over and over so that you may carry them out in an air raid without failure or error. You must know your Sector as intimately as others know their own homes.

You must know your people well. To them, you are the embodiment of all Civilian Defense. In every way, you must seek to gain their confidence so that in any time of stress you may more easily calm and reassure them and avert panic. As you become better acquainted with the individuals in your Sector, you will learn whom to call upon for informal help at such times.

You are not a policeman nor a fireman nor a doctor, although your duties are related to theirs. As an Air Raid Warden, you have a unique position in American community life. It is a position of leadership and trust that demands an effort not less than your best.

## ***Duties Preliminary to Air Attack.***

It is the responsibility of the Senior Warden to see that all Wardens are thoroughly trained and drilled in wartime duties; that they become

familiar with every detail of construction and service facilities in the Sector; that they, in turn, train the residents of the Sector in proper conduct or how to help during air raids; and that all signs, special facilities and equipment are procured and kept in a state of readiness.

### *Training.*

A training course covering the subjects listed below will be arranged by the local Defense Organization. The Senior Warden of each Sector is responsible for seeing that all Wardens in his Sector receive this course.

- A. First Aid.—A 10-hour practical course conducted by the American Red Cross.
- B. Methods of Combating Incendiary Bombs.—Lectures and drill as arranged by local Fire Departments under men who have received special training for instructors at the Civilian Defense Schools. Texts will consist of material furnished at Civilian Defense Schools and publications issued or recommended by the Office of Civilian Defense.
- C. Protection Against Gas.—Lectures conducted by specially trained instructors or Reserve Officers. Texts will consist of material furnished at Civilian Defense Schools and publications issued or recommended by the Office of Civilian Defense.
- D. Reports.—A special course in making out, forwarding, and recording reports, arranged by the Chief Warden.

### *Detailed Knowledge of the Sector.*

Under direction of the Senior Warden, a large scale map will be constructed and hung on the wall of the Post to show location of:



- A. All buildings, the character of each, and access doors to streets and alleys. Also indicate coal chutes, freight delivery entrances, and in cities, power, steam, or telephone tunnels for use in event of building collapse. (In black.)
- B. Fire hydrants, alarm boxes, auxiliary water storage, special fire-fighting equipment, fire stations. (In brown.)
- C. Places of special danger, such as oil-storage tanks, filling stations, lumber yards, other highly inflammable materials, firetrap houses, weak walls. (In red.)
- D. Emergency places of refuge such as deep, well-protected vaults or cellars, safe inside rooms. (In blue.)
- E. Police stations, first-aid posts, hospitals, decontamination stations, road repair stores, and other organized services of Civilian Defense. (By suitable symbol.)

It is not enough to assemble this information on a map. As an Air Raid Warden, you must know it by heart, and be able to find any required position or place in a complete blackout.

### *Detailed Knowledge of the People.*

The people themselves must be studied carefully as to temperament and ability to assist in emergency. The aged and infirm and all children under 5 years of age should be listed and arrangements made to provide them with help if necessary. All persons with special training useful in Civilian Defense should be registered.

All of this information should be recorded in a bound book kept at the Post which will list the following specifically:

Doctors (give specialty).

Nurses (graduate or practical).

Drugstores (nearest, if none in Sector).



Scoutmasters (and number of boys available in troop).

Plant Superintendents.

Building Superintendents (all in Sector).

Building Wardens.































Janitors.

Fire Watchers.

Adjoining Sector Posts.

### *Standard Symbols for Maps.*

Use these standard symbols on all maps—they are intended to make clear the facts you and others will need to know in a hurry.

 Warden's Post	 Bomb Crater
 Fire Watcher's Station	 Roped-off Area
 Fire Alarm	 Street Car Tracks
 Telephone	 Double Tracks
 Air Raid Shelter	 Cisterns or Water Reserves
 Gas-Proof Air Raid Shelter	 Sector Limits
 Entrance to Shelter	 Zone Limits
 Fire Station	 Site of Gas Bomb
 Decontamination Squad Depot	 Contaminated Area (For large area, blue cross-hatch)
 Repair Squad	 Street Lamp
 Casualty Station	 Fire Hydrant
 Decontaminating First Aid Station	 Sewer Gratings
 Bomb Squad Station	 Manhole
 Location of Incident (Show number in center)	 Tree
 Demolished Building	 Sandbags

### *Training Selected People.*

Certain people in every Sector should be selected and trained to assist the Wardens. The extent of such activity will be determined by the Senior Warden.

Some people will be trained in methods of smothering or extinguishing fire bombs. They may be designated as Fire Watchers and assigned to positions of vantage during an alert to spot and report, then fight incendiaries.

Others may be instructed in how to assist the infirm or sick to positions of greater shelter and in what to do to help prevent or allay panic.

### *Signs and Guides.*

The Warden's Post, places available for group shelter, first-aid posts, and all other Civilian Defense headquarters or depots should be plainly marked. As many directional signs as are necessary to guide strangers should be provided.

The Senior Warden will recommend necessary signs to the Chief Warden through administrative channels. He will report regularly on the condition of curb painting, street lamp and traffic light covers and other protective painting and lighting.



## ***The Air Raid Warden in War.***

In time of war or other emergency, think of yourself first as a leader chosen from your neighborhood to do the right thing, with your neighbors and for them. The keynote of your conduct must be courage and presence of mind.

When an "alert" is ordered, go at once to your post, wear your arm band and secure your equipment. Reassure all those you meet and try to persuade them to go about their ordinary tasks until the sirens sound.

### ***The Air Raid Warning.***

A far-flung system of Observation Posts, manned by civilians but under direction of the Army Air Corps, reports the presence of enemy planes by telephone to Filter Centers, which report to Information Centers. From these Centers in turn, a spider's web of telephone lines conveys the necessary stand-by and warning signals into each city and town at a point called the Control Center. Your city has a Control Center.

Again the lines spread out, from your Control Center to Message Centers and to such points as hospitals, casualty stations, police stations, and Air Raid Warden's Posts. These lines go also to the alarm sirens that warn everyone to take cover and to the switchboards that control initial phases of the blackout. The initial alert or stand-by will be telephoned to this network and probably broadcast as well.

The sirens, which are operated at the direction of the Control Center, are power sirens or huge electric air horns with great carrying power. To warn of an air raid, they sound with a rising and falling pitch or a series of short blasts, continuing for 2 minutes.

When the planes have passed or been driven off, a single long blast is sounded by the same sirens or horns.

### *Use of the Warden's Whistle.*

The whistle is furnished you to use in drawing attention to your presence in an emergency, not to sound a general warning. Do not run about blowing it to supplement the siren warning.

### *First Duties Following the Air Raid Warning.*

One Warden remains at the Post to receive and forward messages, the others patrol the Sector.

On patrol, your first duty is to clear the streets. People should be told to go to their homes or, if they cannot reach them within 5 minutes, they should be directed to one of the shelter positions in your Sector.

You must see that drivers park their automobiles at curbs, in a double row if necessary, but in such a manner as to leave a passage for fire engines and ambulances. Wide openings must be left opposite fire plugs. The police will enforce this procedure, but Wardens must be alert for any driver abandoning a vehicle without first properly parking it. (Note.—Drivers should leave keys in cars or trucks, since these vehicles may be needed in emergency.)

Horses should be taken out of the shafts and tied to a lamp post where they will get the best protection from walls and buildings.

When the warning sounds after dark, the black-out will be enforced. You will warn householders at once of any light showing and if it is not at once turned out or covered, report the fact to the nearest policeman. The condition of street and traffic lights should be reported. Any shop signs still illuminated should be turned off or reported.

Watchman's lights should be extinguished. (Note.—Where shop signs or watchman's lights are ordinarily left burning after a store is closed, an outside emergency cut-off switch should be installed so that it can be operated by the Air Raid Warden).

You must next be sure that all Fire Watchers are on post and that fire-fighting devices and supplies are ready for use.

When the streets are clear and all lights covered or extinguished, and fire watchers posted, you should take cover in a doorway or other place where you are protected and can observe developments.

### *If No Bombs Fall.*

If no bombs are dropped in your Sector, your duties will be to guide messengers, first-aid, and other parties passing through, to direct fire patrols, to be alert for gas warnings and to prevent people from leaving their homes and shelters. On no account will you leave your Sector to go to the aid of a neighboring Sector.

### *When Bombs Fall.*

As a Warden you must remember that every Warden's first duty is to the Sector as a whole, even before help to individuals in distress. One Warden must always remain on duty at the Post, to act as a guide to arriving services and to answer the telephone and forward messages.

### *Small Incendiary Bombs.*

If small incendiary bombs lodge on top of buildings, your first duty is to warn the occupants and get the Fire Watchers or other trained persons to deal with the bombs. The locations of these bombs should then be reported immediately by telephone to the designated Fire Report Center.



### *High-Explosive Bombs.*

If a bomb explodes, quickly reconnoiter to determine the exact location and extent of damage, then report accurately to the Post or designated Report Center. After this report, give what help and first aid you can to any persons injured by the blast.

If a bomb fails to explode or an explosion cannot be detected above the crash caused by the fall, investigate the bomb at once. It may be a dud, a time bomb, or a gas bomb. As you approach the point of fall, be especially alert for the presence of gas.

If no gas is present, report the location and probable size of the bomb and damage caused by the fall; then, evacuate people in nearby houses and conduct or direct them to other places of shelter. After this, the streets leading to the place of fall should be roped off if there is time. Volunteers may be found for this work.

### *War Gas.*

If gas is detected, sound the gas alarm immediately. In this case nearby residents should be kept from emerging from their homes. Identify the type of gas as accurately as possible and report its presence to the proper Center.

If gas alarms are sounded in neighboring Sectors, first determine in which direction, and how strongly, the wind is blowing. If the alarm comes from the same direction as the wind, move toward it up to the Sector boundary and be ready to sound the alarm at the first betraying odor *but not before*. It is important to avoid spreading a gas alarm any farther than is absolutely necessary.

When low-flying airplanes come over, again be alert for the presence of gas which may be sprayed



as well as dropped. If gas spray is detected, sound the gas alarm.

### *Large Incendiaries and Arson.*

If large incendiary bombs are dropped or fires started by enemy agents, their location and character must be reported immediately. Then the fire must be fought with whatever local assistance can be obtained, until fire apparatus arrives.

### ***Where and How To Report.***

On the opposite page is a model for reports which you are to make on each air raid incident. As soon as you have the information of an incident, make a report following this form. Include *all* the information which is pertinent.

Whenever possible, make your reports by telephone or such supplementary communication system as is available. However, communication lines may be broken by aerial bombardment and it is highly desirable that messengers be available for emergencies.

If messengers are not assigned by the local Civilian Defense Organization, they may be recruited from the younger members of the population living in your Sector. Either boys or girls over 15 years of age are capable of serving as messengers. Bicycles are desirable aids to normal fast communication by messenger, but they are of little use in a blackout. Messengers should be thoroughly familiar with fastest routes to the Report Centers under blackout conditions.

It is essential that reports be clear and concise. Write them out as you would write a telegram. Always give the number (or other designation) of your own Post first, then give the details as briefly and clearly as possible. Do not use code nor abbreviations unless they are authorized.

# WARDEN'S REPORT FORM

(Form of Report to Report Centers)

---

Commence with the words "AIR RAID DAMAGE."

---

Designation of REPORTING AGENT:  
(e. g., Warden's Sector No.)

---

POSITION of occurrence:

---

TYPE of bombs: H. E. ☐ Incendiary ☐ Poison gas ☐

---

Approximate number of CASUALTIES:  
(if any trapped under wreckage, say so)

---

If FIRE, say so:

---

Damage to MAINS: Water ☐ Coal gas ☐  
Overhead electric cables ☐ Sewers. ☐

---

Names of ROADS BLOCKED:

---

Position of any UNEXPLODED BOMBS:

---

Time of occurrence (approximate):

---

Services already ON THE SPOT or COMING:

---

Remarks:

---

Finish with the words "MESSAGE ENDS."

---

*See that each report you send contains all the pertinent information included in the table above. Do not use this page for reports—it is a check-list to help you make sure you have included everything.*

## ***Note Here Where To Send Reports.***

Report Bomb Explosions to .....  
..... Telephone .....  
Report Unexploded Bombs to .....  
..... Telephone .....  
Report Gas Bombs to .....  
..... Telephone .....  
Report Fire Bombs to .....  
..... Telephone .....  
Nearest Police Station .....  
..... Telephone .....  
Nearest Fire Station .....  
..... Telephone .....  
Nearest Decontamination Station (for Persons) ...  
..... Telephone .....  
Nearest Casualty Station .....  
..... Telephone .....  
Nearest Hospital .....  
..... Telephone .....  
Nearest Decontamination Squad Depot .....  
..... Telephone .....  
Location and Addresses of Posts in Adjoining  
Sectors:  
..... Telephone .....  
..... Telephone .....  
..... Telephone .....  
..... Telephone .....

## ***Final Reports.***

In addition to the immediate reports of an air raid incident, a final report must be made when an incident is closed. This will be prepared by the Warden in charge of action in the case for transmission by the Senior Warden to his superiors.

## ***Keeping the Log.***

The events of each day should be kept in the log book in diary form. Write up all events clearly and concisely.

After preliminary Post Organization is completed, the Senior Warden should assemble all Wardens at least once a week, read the log, and cause to be entered in the record book and on the Sector map any important changes or additions.

## ***Fire Watchers.***

Combating incendiary bombs is everyone's duty, yet not all individuals can cope with the intense heat, nor do all have the necessary physical stamina. As a practical measure, the most stalwart persons in each block or apartment should be chosen for training in the methods of combating fire bombs, particularly the light magnesium bombs. For training purposes, probably a bomb will have to be simulated by burning a rolled-up newspaper or some similar device. Training should be given the selected individuals in both the sand method (snuffing) and water spray method (accelerating). When they have shown satisfactory aptitude, they may be enrolled in the Civilian Defense forces as Fire Watchers and assigned to regular posts of vantage.

Your Civilian Defense Council will issue to those accepted for enrollment arm bands, identification cards, and handbooks.

Fire Watchers take up their stations only after an air raid alarm sounds. From these positions, all roof areas must be watched. The Post map should be marked with a red triangle at the points where Fire Watchers are stationed. Fire

Watchers' duties are described in a separate handbook to be issued soon by the U. S. Office of Civilian Defense.



*Place watchers on high places, standpipes, steeples, etc., so that all roof areas can be watched with the fewest posts.*

**Air Raid Wardens of Post No.** .....

**City of** ....., **State of** .....

1. Senior Warden.....

BUSINESS ADDRESS TELEPHONE

HOME ADDRESS TELEPHONE

2. Second Warden.....

BUSINESS ADDRESS TELEPHONE

HOME ADDRESS TELEPHONE

3. Third Warden.....

BUSINESS ADDRESS TELEPHONE

HOME ADDRESS TELEPHONE

4. Fourth Warden.....

BUSINESS ADDRESS TELEPHONE

HOME ADDRESS TELEPHONE

**Building Wardens:**

(1) Building address.....

Name of warden.....

TELEPHONE

(2) Building address.....

Name of warden.....

TELEPHONE



## ***Handicapped People— Deaf and Blind***

The Warden has a special responsibility for every *deaf* and *blind* person in his Sector.

Find out who and where they are. Find out who will be responsible *at all times* for letting deaf people know that there is an air-raid alarm. Find out who will be responsible *at all times* for letting blind people know that a blackout is on or ordered, who will positively see that their lights are out, and who will take care of getting them into refuge rooms if necessary.

It is hoped that all handicapped persons can be evacuated to safe areas in advance of the threat on the neighborhoods where they live; however, *it is up to the Warden* to take care of them, especially, or see that some reliable person does take care of them, whatever happens.

### ***“If I were a Warden”***

My first job would be to know everyone and every house and every street and lamp-post and manhole and gas shut-off and electrical connection in my sector; to know what people could do, and to put them to work ready to do it; to see that attics were cleaned out, and made fire-resisting; to see that every house had garden hose with spray and jet nozzle, buckets, emergency water-supply, and a few simple tools,

I would want them to know me, have confidence in me, and be prepared to work with me and the other members of the U. S. Citizens' Defense Corps.

I would want to know how to do a lot of things myself; put out incendiary bombs; direct emergency vehicles; defend myself against gas; make a map of my sector; use the telephone on emergency calls; know where the other services (auxiliary fire, auxiliary police, bomb squads, repair squads, decontamination squads, etc.) were located;

especially to know where, when, and how to report a "bomb incident."

When a blackout was ordered, I would expect to see that it was complete, and that blackout orders were complied with. I would warn people, who showed lights, to extinguish or cover them instantly; and if they failed or refused to do so, I would get a regular or auxiliary police officer to enforce the blackout.

If and when an air-raid alarm were given, I would have two principal duties right off: (1) to get people into shelter, and (2) to clear the streets seeing that cars were parked and that a clear way was left for emergency vehicles.

I would have chosen and trained fire watchers; in the event of bombing; I would want to see that the fire watchers man their posts, and know how, what, when, and where to report.

Should bombs fall in my sector, I would go to the scene of the incident, estimate damage, report it, and take charge as "incident officer" if I were the senior officer present.

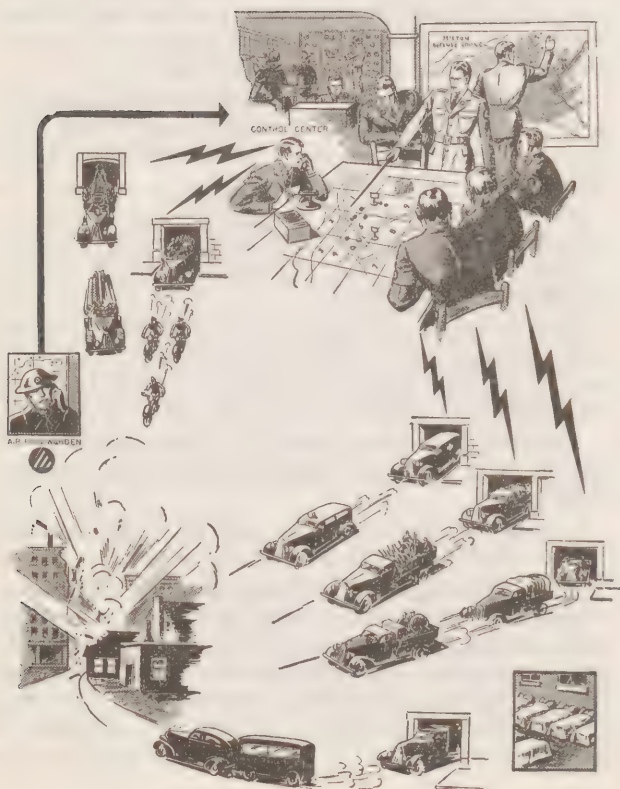
I would expect to direct the emergency vehicles as to the best way to get to the incident. I would expect to take charge of property from bombed premises, for claiming later by the owners.

I would, of course, expect to quiet the fears of people who showed signs of becoming panic-stricken.

I would expect to be a sort of "noncommissioned officer" for the civilian populace.

John Strachey says of the English Wardens, "their quietness has echoed around the world; their ordinariness has become a flag; their kindness has become a rock; their courage has become an avalanche. In their amusement, Empires melt." That would be my ideal if I were a warden.

# THE WARDEN REPORTS



Despite all the efforts of active defense, a bomber has reached its objective and the first bombs fall. The nearest warden at once inspects the damage, and telephones his report, through channels, to the Control Center.

As reports are assembled and plotted on the Control Map, the Commander of the Local Citizens Defense Corps sends his forces into action. Regular and Auxiliary Fire Forces are dispatched to the fires started by incendiary bombs. Rescue Squads and First Aid Parties speed to help the trapped and injured; Demolition and Clearance Squads, followed by the Road Repair Crews, clear away the rubble and reopen the streets to traffic.

Close in their wake come those who will feed and find beds for families made homeless in the attack.

To be a modern minute man you need organization and training.

***This Page Is for Warden's Notes***

***This Page Is for Warden's Notes***



***This Page Is for Warden's Notes***

# BLACKOUTS

Blackouts are ordered only on the authority of the War Department. A blackout may be ordered during any period when hostile forces are believed to be in the vicinity, whether or not enemy airplanes have been sighted.

**"Blacking Out"** a city means that light sources must be so hidden or dimmed that an enemy bomber will have difficulty in finding the target and lack aiming points such as main street intersections. Following are the general plans used.

**Street Lights.** These are fitted with low-watt bulbs and covers that diffuse the light.

**Automobiles.** Headlights must be covered except for a small pair of slits and hooded.

**Traffic Lights.** Are treated the same way as automobile headlights.

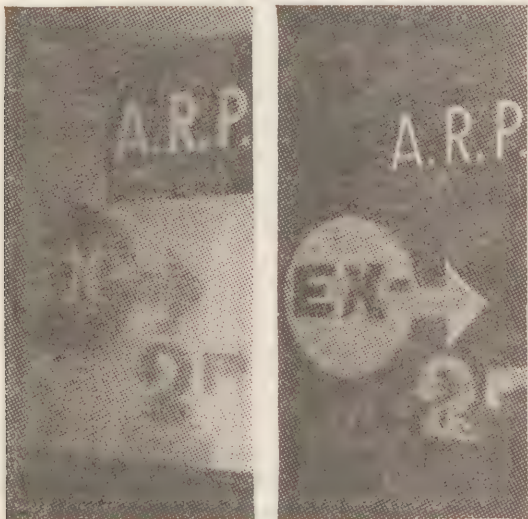
**Buildings.** Windows and doors must be covered with opaque materials. Paint on the glass, heavy curtains, light "baffles" or screens are some of the ways. No cracks of light must show.

**Aids to Seeing.** Since people have to move about during a blackout, the lack of light may be somewhat offset and safety promoted by—



1. Painting curbs, trees, poles and hydrants with white paint. There is a luminous paint, also, that gives off a faint blue light quite visible in total darkness.

2. Painting signs of luminous paint or making them of fluorescent material on which shines ultra-violet or "black" light or installing dimly lighted signs with horizontal screens to diffuse the light.



3. Painting white fenders and stripes around automobiles.

Members of the Citizens' Defense Corps who have outside duties during a blackout can be identified more easily if they wear a white cap or white-painted helmet; also a white belt fitted with crossed straps over the shoulders.



## **Individual Conduct During a Blackout.**

Observe traffic rules. Keep to the right and remember the man or vehicle approaching *from* your right *has* the right of way.

If you must smoke, go into a hallway or covered place to strike the match. No smoking in the open is an even better rule. Make all crossings at intersections. It is hard for a driver to see you.

Be sure that everyone you know is acquainted with these simple rules.



**DO NOT** run when air raid warnings sound after dark during blackouts.



Use your flashlight as little as possible, if at all. **Never** point it upward.



Curb edges and direction signs painted white will help you find your way.



Keep pets on leash if you take them out after dark.



If an air raid warning sounds, get under cover, you may be hit by shell fragments.



If you don't know the neighborhood the first policeman or warden will tell you where to go





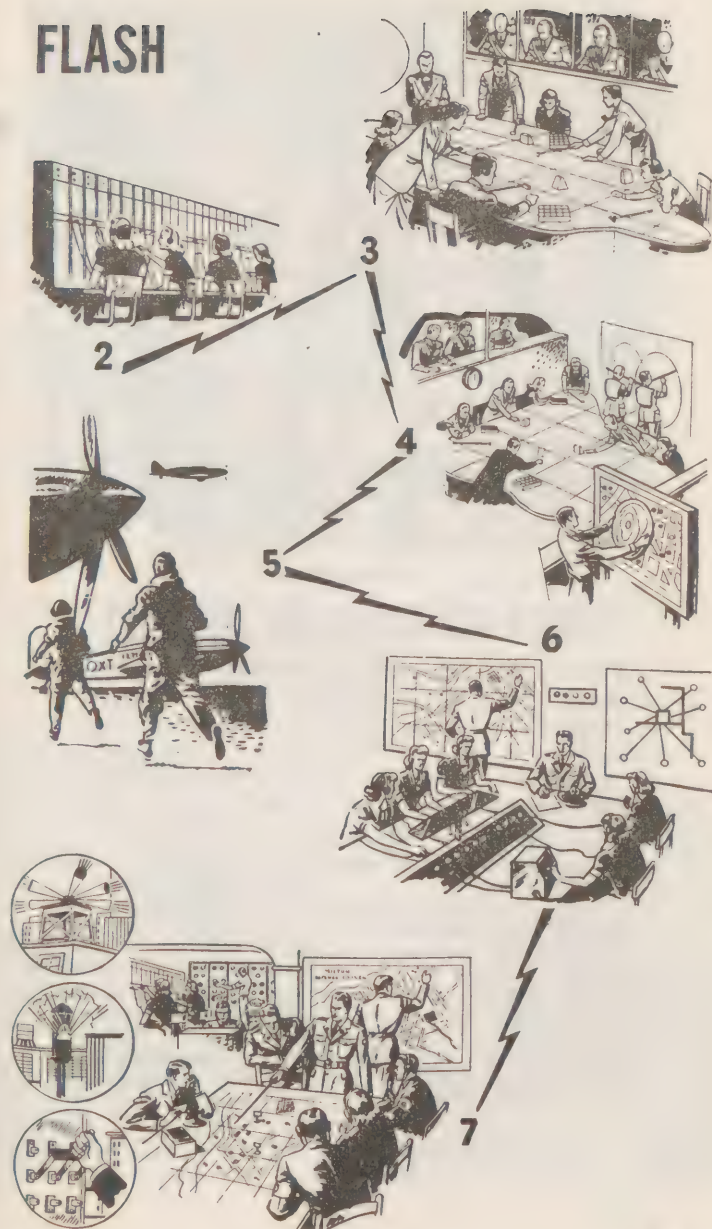
## ARMY

When an observer sights a group of hostile planes, he picks up his telephone (1) and says *Army Flash*. The Central Operator (2) at once connects him with the assigned Filter Center (3) to which he reports the type of planes, number, height, and direction of flight. When several reports agree, watchers transmit the data to an Information Center (4) where developments over a large area are plotted on a huge map.

Watching the map, Air Corps officers order interceptor planes into the air, (5) direct them to contact with the enemy; another officer notes the cities threatened and flashes a yellow, blue, or red alarm, according to the degree of danger, to the proper Warning District Center (6).

At this point, Civilian Defense takes over from the Air Corps, telephones the warnings to Control Centers (7) within the Warning District. And here the Commander of the local Citizens' Defense Corps orders the alert, has the public warning sounded usually short blasts on air horns, power horns or steam whistles or on the wailing sirens—and if the bombers arrive overhead, directs the operation of passive defense. Learn the air raid warning for your city.

## FLASH





The Refuge Room

## WHAT TO DO IN AN AIR RAID

At the yellow warning, if you are not already on duty, you will be summoned to your post and will carry out orders until relieved. However, here are the rules for those who do not have assigned duties when the air raid warning comes. Memorize them carefully so that you can in turn instruct others. Here is what to tell them:

1. If away from home, seek the nearest shelter. Get off the street.
2. If you are driving, first park your car at the curb; be sure all lights are shut off.
3. If you are at home, send the others to the refuge room. This should be a comfortable place with as little window exposure as possible, equipped with drinking water, things to read, toilet facilities, a flashlight, a portable radio, a sturdy table, and food if you like.
4. Turn off all gas stove burners but leave pilot lights, water heaters and furnaces alone. Leave electricity and water on. Fill some large containers or a bathtub with water.
5. Check up on blackout arrangements. Don't let a crack of light show to the outside.





6. See that everyone's eyeglasses and dentures are in the refuge room. There should be additional warm garments for everyone, too.

7. Keep out of line of windows. Fragments and glass splinters cause most casualties.

8. If bombs fall nearby, get under a heavy table, an overturned davenport.

9. Don't rush out when the "all clear" signal sounds. Maintain the blackout. The Raiders may return.

10. Otherwise, keep cool; be sensible and set an example to others.

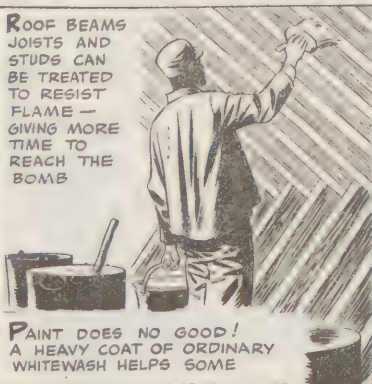
## FIRE DEFENSE

IT WILL BE VERY DIFFICULT TO FIGHT A MAGNESIUM BOMB UNLESS SOME WORK IS DONE BEFORE THE ATTACK



ALL FURNITURE TRUNKS AND JUNK OF ALL KINDS SHOULD BE REMOVED FROM ATTIC OR TOP FLOOR!

ROOF BEAMS JOISTS AND STUDS CAN BE TREATED TO RESIST FLAME — GIVING MORE TIME TO REACH THE BOMB



PAINT DOES NO GOOD! A HEAVY COAT OF ORDINARY WHITEWASH HELPS SOME

# HOW THE MAGNESIUM BOMB WORKS

THE MOST EFFECTIVE  
INCENDIARY BOMB  
MADE SO FAR  
IS THE  
**MAGNESIUM  
BOMB**



LENGTH, ABOUT 14" WEIGHT, 2.2 POUNDS

A LARGE BOMBER  
CAN CARRY 1000  
SUCH BOMBS!



THEY ARE USUALLY RELEASED  
20 TO 50 AT A TIME, SPREAD  
LIKE SHOT BEFORE STRIKING.

DROPPED FROM A HEIGHT OF 20,000  
FEET, THEY DEVELOP ENOUGH FORCE  
TO PENETRATE AN AVERAGE ROOF...



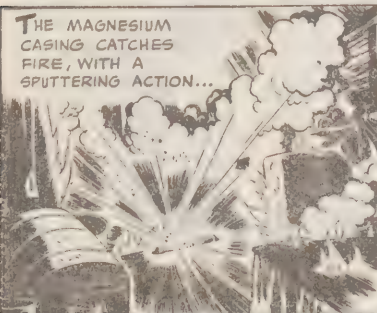
...THUS, THEY USUALLY START BURNING  
IN A TOP STORY OR ATTIC

THE THERMITE FILLING OF  
IRON OXIDE AND FINELY DIVIDED  
ALUMINUM IS THEN IGNITED AND  
DEVELOPS A FIERCE HEAT OF  
**OVER 4500 DEGREES!**



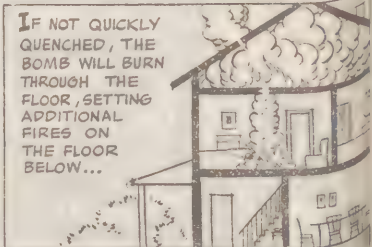
THE FLAME ROARS OUT OF THE  
ESCAPE HOLES.

THE MAGNESIUM  
CASING CATCHES  
FIRE, WITH A  
SPUTTERING ACTION...



...FLAMING MOLTEN METAL IS THROWN  
ABOUT AND SURROUNDING INFLAMMABLE  
MATERIAL CATCHES FIRE

IF NOT QUICKLY  
QUENCHED, THE  
BOMB WILL BURN  
THROUGH THE  
FLOOR, SETTING  
ADDITIONAL  
FIRES ON  
THE FLOOR  
BELOW...



BUT, WITH PROMPT  
ACTION AND SIMPLE  
TOOLS, A MAGNESIUM  
BOMB CAN BE QUENCHED!

# CONTROLLING WITH WATER

TO FIGHT A BOMB WITH WATER, YOU NEED TWO MEN AND SPECIAL EQUIPMENT. REMEMBER, YOU CAN'T PUT OUT THE BOMB — YOU FEED IT WATER, TO BURN OUT!

ONE MAN PUMPS 80 STROKES A MINUTE TO KEEP A STRONG ENOUGH PRESSURE TO THROW A JET 30 FEET, AS SPRAY, 15 FEET. ONE MAN FIGHTS THE FIRE.

YOU USE UP A BUCKET IN 1½ MINUTES



SPECIAL DOUBLE ACTION PUMP WITH 30 FEET OF HOSE AND SPECIAL NOZZLE NEEDED.



JET ON SURROUNDINGS!

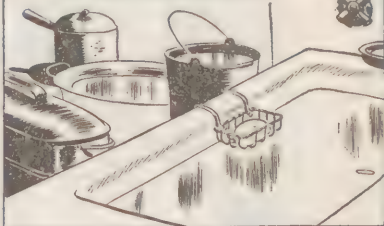


SPRAY ON BOMB

A THIRD PERSON IS MOST USEFUL TO CHECK OTHER POINTS FOR FLAME REPLENISH WATER AND RELIEVE PUMPER.



AMPLE STORAGE OF WATER SHOULD BE PROVIDED IN ADVANCE, AS WATER MAINS MAY BE BROKEN BY HIGH EXPLOSIVES AND PRESSURE LOST! FILL THE TUB, EXTRA PAILS AND DON'T FORGET IN A PINCH — THE CONTENTS OF HOT WATER OR HEATING BOILERS!



NEVER THROW THE CONTENTS OF A WATER PAIL ON A BOMB!



...IT WILL SCATTER WITH EXPLOSIVE VIOLENCE!

IF CONTROL OF THE BOMB SEEMS DOUBTFUL, HAVE AN ALARM TURNED IN, BUT CONTINUE FIGHTING THE BOMB UNTIL HELP ARRIVES OR SUPPLIES ARE EXHAUSTED!



1 LEARN NOW HOW TO CALL



2 LEARN NOW LOCATION OF NEAREST ALARM...

MILTON CANIFF

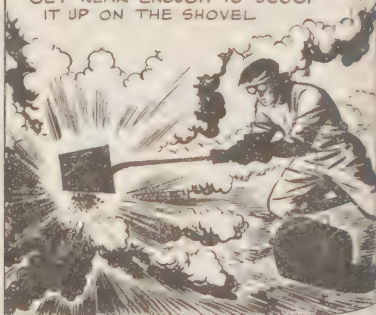


# CONTROLLING WITH SAND

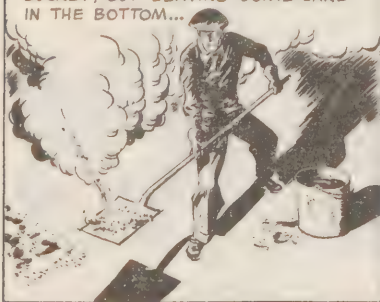
APPROACH THE BOMB IN A CROUCHING OR CRAWLING POSITION. PLACE THE SAND BUCKET, UPSET, TO ALLOW A FULL-ARM SWING TOWARD THE BOMB



TRY TO COVER THE BOMB WITH DRY SAND, TO CONFINE IT'S ACTION, SO THAT YOU CAN GET NEAR ENOUGH TO SCOOP IT UP ON THE SHOVEL



WHEN THE BOMB IS UNDER FAIR CONTROL, SCOOP IT UP ON THE SHOVEL, FIRST RIGHTING THE BUCKET, BUT LEAVING SOME SAND IN THE BOTTOM...

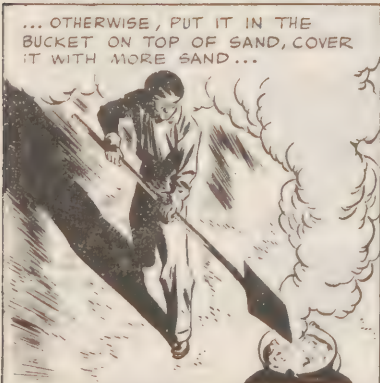


... IF THE BOMB CAN BE DROPPED FROM A WINDOW TO SOME PLACE WHERE IT CAN BURN OUT WITHOUT HARM —

**GET RID OF IT THAT WAY!**



... OTHERWISE, PUT IT IN THE BUCKET ON TOP OF SAND, COVER IT WITH MORE SAND...



... THEN, HOLDING THE BUCKET ON THE SHOVEL, CARRY IT OUT OF THE HOUSE...





## ABOUT FIRE EXTINGUISHERS

Many houses and public buildings have fire extinguishers. They will be as useful as ever in putting out fires caused by an incendiary bomb. For putting out the bomb itself, the extinguisher may not be suitable.

Read the label. If it says that the contents include **CARBON TETRACHLORIDE**, it cannot under any circumstances be used on a magnesium bomb. It is not only ineffective, it may cause dangerous gas to be generated. After the bomb is burnt out, use it on any remaining fire.

All water-type extinguishers are suitable. If the label says **SODA-ACID**, that's simply a means of creating pressure in the extinguisher. Turn it upside down, use it. You can get a spray effect by putting the thumb over the nozzle, use the jet on surrounding fires. However, *one extinguisher is not enough to burn out a magnesium bomb*. And you cannot refill the extinguisher.

It is best to have sand or pump-bucket equipment handy, use them on the bomb, and save the extinguishers for resulting fires.

A foam extinguisher will also help to control a bomb, but one extinguisher load will not finish the job.





See that the extinguishers you know about are ready for use.




























# CHEMICAL WARFARE AGENTS

## REFERENCE AND TRAINING CHART

40

LEGEND

			
HOSPITAL CASE	FIRST AID STATION	LUNG PROTECTION NEEDED	COMPLETE PROTECTION NEEDED

CLASS	NAMES AND SYMBOLS	FORM	ODOR	PERSISTENCE	TACTICAL CLASS	PROTECTION	FIRST AID <small>[After removal from gassed area]</small>	PHYSIOLOGICAL EFFECT
VESICANTS	MUSTARD <small>TC-CR-100-10-10-10</small>	LIQUID AND VAPOR	 Sulfur, Mustard, Mustard	One day to one week. Longer if dry or cold.			Undress, remove liquid mustard with protective garment, wash with soap, or kerosene. Wash eyes and nose with cold solution.	Delayed effect. Burns skin or membrane. Inflammation respiratory tract, leading to pneumonia. Eye irritation, conjunctivitis.
	LEWISITE <small>CR-100-10-10-10</small>	LIQUID AND VAPOR	 Arsenic	One day to one week. Longer if dry or cold.			Undress, remove liquid Lewisite with hydrogen peroxide. If in clothing, or kerosene, bathing, wash eyes and nose with soda. Rust—Ditch.	Burning or irritation of eyes, nasal passages, respiratory tract skin. As several hours.
LUNG IRRITANTS	CHLOROPICRIN <small>PF-100-10-10-10</small>	GAS	 Fragrant, acid	Days 6 hours. Weeks 17 hours.			Wash eyes, keep quiet and warm. Do not use bandages.	Causes severe coughing, crying, vomiting.
	DIPHOSGENE <small>TC-100-10-10-10</small>	GAS	 Fragrant, acid	30 minutes.			Keep quiet and warm. Cover clothes as a stimulant.	Causes coughing, breathing hurts. Eyes water, itchy.
LACRIMATORS	PHOSGENE <small>CR-100-10-10-10</small>	GAS	 Bitter, tart, bitter odor	10 to 30 minutes.			Keep quiet and warm, head rest. Coffee as a stimulant. Loosen clothing, the alcohol or cigarettes.	Irritation of lungs, occasional vomiting, tears in eyes, dried feeling. Occasionally symptoms delayed. Later, collapse, heart failure.
	CLORACETOPHENE <small>CR-100-10-10-10</small>	GAS	 Apple blossom	10 minutes.			Wash eyes with cold water or bare cold solution. Do not bandage. Face wind. For skin, sodium sulphate solution.	Makes eyes smart. Short tightly. Tears flow. Temporary.
STERNUTATORS	BROMBENZYL CYANIDE <small>CR-100-10-10-10</small>	GAS	 See first	Several days. (Weeks in winter.)			Wash eyes with bare acid. Do not bandage.	Eyes smart, start, tears flow. Effect lasts some time. Headache.
	ADAMSITE <small>CR-100-10-10-10</small>	GAS	 See first	10 minutes.			Keep quiet and warm. Loosen clothing. Sprinkle nose with wet ammonia or stuff blacking powder. Aspirin for headache.	Causes sneezing, sick, depressed feeling, headache.
	DIPHENYL CHLORARSINE <small>(C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>AsCl</small>	SMOKE	 See first	Severely 10 minutes.			Remove to pure air. Very quiet. Wash face with wet ammonia.	Causes sick feeling, headache.

- The importance of proper first aid for gas victims cannot be overemphasized. The following are general rules which apply in all cases.
- Act promptly and quietly; be calm.
  - Put a gas mask on the patient if gas is still present or, if he has a mask on, check to see that his is properly adjusted. If a mask is not available, wet a handkerchief or other cloth and have him breathe through it.
  - Keep the patient at absolute rest; loosen clothing to facilitate breathing.
  - Remove the patient to a gas-free place as soon as possible.
  - Summon medical aid promptly; if possible, send the victim to a hospital.
  - Do not permit the patient to smoke, as this causes coughing and, hence, exertion.



# WAR GASES

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## ***General Notes.***

War "Gases," or chemical agents used to produce casualties, are surprise weapons. As this is written, they have not been used against the British or others trained to protect themselves. They have been used against the Ethiopians and the Chinese.

A gas-tight room suitably located offers fair protection against any probable concentration of war gas in a city. For those whose duties take them into the streets a gas mask offers full protection against all but the "blister gases" (liquid vesicants). To enter areas where mustard or lewisite is present, full protective clothing is needed.

War gases may be dropped in bombs or simple containers and liquid vesicants may also be sprayed by airplanes.

The gas warning is a "percussion sound"—that is, bells, drums, hand rattles, rapidly struck resonant objects of any kind. If the presence of gas is suspected, report to the nearest warden. Do not shout if distant gas alarms are heard. The danger is local and the spreading of an alarm must be left to the wardens.

The notes on the following pages are simply for reference for those who have received instruction in protection against gas. Reading them will not by itself make you an expert in gas defense.

# THE GAS-TIGHT ROOM

War gases hug the ground, flow into cellars and basements. Upper floors of a dwelling are away from dangerous concentrations. If all openings and cracks are closed, a room three stories from the ground will offer good protection against war gases.

To stop cracks and small openings, tape of various kinds may be used. A mush made by soaking newspapers in water or patching plaster may be used for caulking larger openings. A piece of wall board, nails and caulking material may be kept handy to cover a window broken by the blast of high explosives.

One door may be used as an entrance by fastening over it a blanket in such a way as to seal it tightly when no one is going in or out. If soaked in oil to close the air spaces, the blanket is more effective.

Store necessary supplies in such a room—food, water, chairs, a battery-operated radio, flashlight and by all means provide some sort of toilet facilities use it as the refuge room.



Allow 20 square feet of floor space for each person who is to occupy an average room with a ceiling nine feet high. This will give enough air to occupy the room 10 hours.

The illustration shows where to stop up cracks, how to hang the blanket at the entrance door.

## ***“Blister Gases” and Decontamination.***

Lewisite and mustard “gas” are liquids in the normal state. They give off a dangerous vapor that acts as a war gas and unless chemically neutralized may persist for a week, contaminating the air for a considerable distance down wind.

Full protection against these chemical agents is afforded by gas-proof clothing, covering the wearer from top to toe and tightened at wrists and ankles. The greatest care must be used in undressing after exposure to lewisite or mustard and this is done at personnel decontamination stations, where vesicant casualties are also taken for first aid.

Decontamination of streets, walls, and buildings is effected principally by means of chloride of lime (bleaching powder) freshly mixed with earth and water as a slurry or paste. It must be thoroughly worked into cracks and crevices and the resulting product flushed away. This work is done by the decontamination squads.

The liquid vesicants are very penetrating and ordinary shoes or clothing offer no protection. Do not go into the streets after a gas alarm has been sounded except on direction of the Warden.

RANK DESIGNATION	▲	▲▲	▲▲▲	▲▲▲▲	△	△△	△△△	★	★★	★★★	★★★★	★★★★★
AIR RAID WARDEN	FIRST CLASS	SENIOR OR SECTOR WARDEN		ZONE LEADER	GROUP LEADER	CHIEF WARDEN	STATE WARDEN	NO OTHER RANKS				
AUXILIARY FIREMEN	"	SQUAD LEADER	PLATOON LEADER		COMPANY LEADER	FIRE CHIEF	STATE FIRE COORDINATOR	NO OTHER RANKS				
AUXILIARY POLICEMEN	"	"	"	"	"	CHIEF OF POLICE	NO OTHER RANKS					
BOMB SQUADS	"	"	"	NONE	"	"	NO OTHER RANKS					
RESCUE SQUADS	"	"	"	DEPUTY LEADER	"	FIRE CHIEF	NO OTHER RANKS					
MEDICAL FIELD UNITS	"	TEAM LEADER	SQUAD LEADER		UNIT LEADER	CHIEF OF E M S	STATE MEDICAL DIRECTOR	NO OTHER RANKS				
MEDICAL AUXILIARIES (stretcher teams)	"	"	"	"	NO OTHER RANKS							
NURSES' AIDES		NR RANK DESIGNATIONS										
EMERGENCY FOOD AND HOUSING	FIRST CLASS	UNIT LEADER	DEPUTY LEADER		COMPANY LEADER	CHIEF WARDEN	NO OTHER RANKS					
DRIVERS UNITS	"	CONVOY LEADER	"	"	"	NO OTHER RANKS						
MESSENGERS	"	SENIOR MESSENGER	PLATOON LEADER		"	NO OTHER RANKS						
ROAD REPAIR CREWS	"	CREW LEADER	DEPUTY LEADER		"							
DEMOLITION AND CLEAR.	"	"	"	"	"	CHIEF OF EMER. WORK S.	NO OTHER RANKS					
DECONTAMINATION SQUADS	"	SQUAD LEADER	STATION LEADER		"							
FIRE WATCHERS	"	NO OTHER RANKS										
REPAIR CREWS	"	CREW LEADER	SERVICE LEADER		NONE	CHIEF OF UTILITIES	NO OTHER RANKS					
LOCAL STAFF	"	AS REQUIRED				CONTROLLER	COMMANDER	COORDINATOR	NO OTHER RANKS			
STATE STAFF	"	AS REQUIRED				AS DESIGNATED	AS DESIGNATED	ASST. COORDINATOR	COORDINATOR	NO OTHER RANKS		
U. S. STAFF	"	AS REQUIRED					RE DESIGNATED	AS DESIGNATED	AS DESIGNATED	REGION DIRECTOR PRINCIPAL ASSTS	U. S. DIRECTOR	
EQUIVALENT ARMY TERM	PVT 1st CLASS	NON-COMM OFF	LIEUTENANT	CAPTAIN	MAJOR	COLONEL	BRIG GEN.	MAJ GEN	LIEUT GEN	GENERAL		

# CITIZENS' DEFENSE CORPS

The team of trained civilian services organized to operate the passive defense is known as the Citizens' Defense Corps. It includes regular forces of the city—police, firemen, welfare workers, sanitation men—as well as volunteers. It operates as a unit under the local Defense Coordinator.

## *Staff.*

The Citizens' Defense Corps is headed by a Commander assisted by a staff. His second in command is the Executive Officer. There are others who operate the control center and the communications, account for personnel and property and assign transportation. The Chiefs of the Fire and Police Departments assist him in the passive defense. There is a Chief Air Raid Warden, a Chief of Emergency Medical Services, and others who control groups of the enrolled volunteers. Learn the organization of the Citizens' Defense Corps in your community.

## ***Enrolled Volunteer Services of The Citizens' Defense Corps.***



Air Raid Wardens are in complete charge of a sector containing the homes of about 500 people. To them the warden is the embodiment of all Civilian Defense.



Auxiliary Firemen assist the regular fire-fighting forces.



Auxiliary Policemen assist the police department in enforcing blackout restrictions, in traffic control, and in guard duties.





Bomb Squads are specially trained squads of police to handle and dispose of time bombs and duds.



Rescue Squads are trained crews of about 10 men each with special equipment to rescue the injured from debris.



Medical Forces consist of first-aid parties and stretcher squads and personnel at casualty clearing stations. Members of these forces are doctors, trained nurses, and assistants.



Nurses' Aides assist nurses. They have special Red Cross Training.



Emergency Food and Housing Corps members provide welfare services to the needy and homeless.



Drivers Units consist of emergency drivers of vehicles used by the Civilian Defense services.



Messengers carry supplies, dispatches, and messages wherever needed.



Road Repair Crews restore normal flow of traffic as quickly as possible. Utility repair men work with these crews and with demolition squads.



Demolition and Clearance Crews remove rubble, fill bomb craters, and remove unsafe walls or parts of buildings.



Decontamination squad members are specially trained to treat clothing and equipment as well as streets and walls contaminated by war gas.



Fire Watchers must spot and combat incendiary bombs.



# A MANUAL OF DRILL

*for the*

## CITIZENS' DEFENSE CORPS

*Adapted from the Basic Field Manual of the  
United States Army*

Basic drill is required of a volunteer for award of the insigne. Drill for units of the Citizens' Defense Corps, moreover, is recommended as it helps to coordinate the work of individuals under a single command. The purposes of drill are:

**1** To enable a leader to move his unit from one place to another in an orderly manner.

**2** To aid in disciplinary training by instilling habits of precision and response to the leader's orders.

**3** To provide a means, through ceremonies, of enhancing the morale; develop a spirit of cohesion; and give an interesting spectacle to the public.

**4** To give leaders practical training in commanding volunteers.

*Drills should be frequent, intensive, and of short duration.*

## ***General.***

A normal squad of volunteers contains 12 men or 12 women, all of one service. It consists of a leader, an assistant leader, and other personnel. As far as practicable, the squad is kept intact. The usual formation of the squad is a single rank or single file. This permits variations in the number of men composing the squad.

## ***To Form the Squad.***

The command is; **FALL IN.** At the command **FALL IN** the squad forms in line as shown. Squad leader on the squad's extreme right, assistant leader on the squad's extreme left.

To secure uniformity, the tallest leader is put in charge of the first squad, the second tallest in charge of the second squad, etc. Assistant

**Fig. I—A Squad in Line**

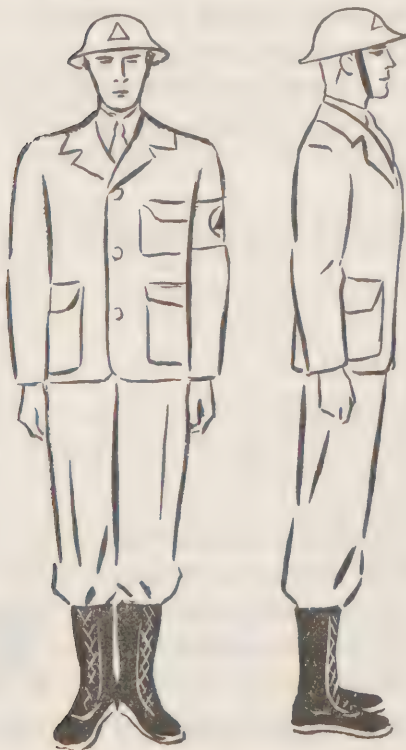


leaders are similarly arranged. Other volunteers are placed according to height beginning with the tallest being placed next to the leader.

On falling in, each man except the one on the left extends his left arm laterally at shoulder height, palm of the hand down, fingers extended and

joined. Each man, except the one on the right, turns his head and eyes to the right and places himself in line so that his right shoulder touches lightly the tips of the fingers of the man on his right. As soon as proper intervals have been obtained, each man comes to attention, drops his arm smartly to his side and turns his head to

Fig. II—A Volunteer at Attention



the front, heels are together, feet forming a right angle; knees are straight without stiffness, hips level and drawn back slightly, body erect and resting equally on hips, chest lifted and arched, shoulders square and falling equally. Arms hang straight down without stiffness with the back of the hands out, fingers held naturally. Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical, eyes straight to the front. The weight of the body rests equally on the heels and the balls of the feet. In assuming the position of attention the heels are brought together smartly and audibly.

(Leaders and assistant leaders will be appointed under authority defined by the Chief of the Service of which the squad forms a part.

### ***To Form at Close Intervals.***

The commands are: At Close Interval, **FALL IN**. At the command **FALL IN**, the volunteers fall in as described above, except that close intervals are obtained by placing the left hands on the hips. In this position the heel of the palm of the hand rests on the hip, the fingers and thumb are extended and joined, and the elbow is in the plane of the body.



**Fig. III—A Volunteer Falling in at Close Interval**

## ***To Aline the Squad.***

If in line, the commands are: Dress Right, DRESS, Ready, Front. At the command DRESS, each man except the one on the left extends his left arm (or if at close interval, places his left hand upon his hip), and all aline themselves to the right. The instructor places himself on the right flank one pace from and in prolongation of the line and facing down the line. From this position he verifies the alinement of the men, ordering individual men to move forward or back as is necessary. Having checked the alinement, he faces to the right in marching and moves three paces forward, halts, faces to the left and commands: Ready, FRONT. At the command FRONT, arms are dropped quietly and smartly to the sides and heads turned to the front.

## ***Rests.***

Being at a halt the commands are: FALL OUT, REST, AT EASE, and PARADE REST.

At the command FALL OUT, volunteers leave the ranks but are required to remain in the immediate vicinity.

At the command REST, one foot is kept in place. Silence and immobility are not required.

At the command AT EASE the right foot is

kept in place. Silence but not immobility is required.

At the command of execution **REST** of Parade **REST**, move the left foot smartly 12 inches to the left of the right foot keeping the legs straight so that the weight of the body rests equally on both feet. At the same time, clasp the hands behind the back, palms to the rear, thumb and fingers of the right hand clasping the left thumb without constraint; preserving silence and immobility.

Being at any of the rests except **FALL OUT**, to resume the position of Attention, the commands are Squad (or other unit being commanded) **ATTENTION**. At the command **ATTENTION** take that position in your squad.

### ***Eyes right (left).***

The commands are: Eyes (Preliminary Command), **RIGHT** (Command of Execution) (**LEFT**) Ready **FRONT!** At the command **RIGHT**, each man turns his head and eyes to the right. At the command **FRONT** the head and eyes are turned to the front.



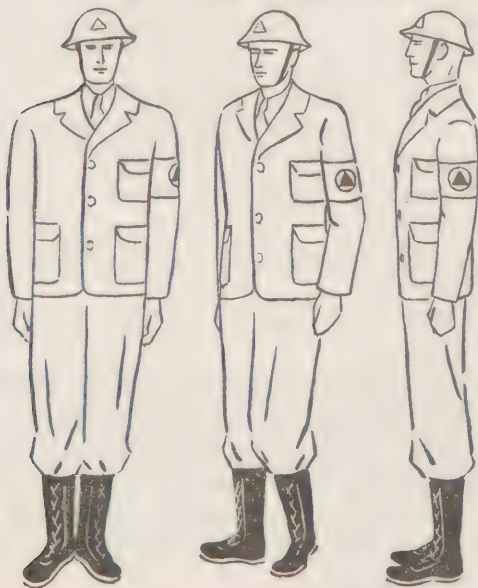
## **Facings.**

*(All Facings are executed at the halt.)*

*To the flank.*—The commands are **Right (Left) FACE**. At the command **FACE**, slightly raise the left heel and the right toe: Face to the right, turning on the right heel, assisted by a slight pressure on the ball of the left foot. Next, place the left foot beside the right. Exercise **Left FACE** on the left heel in a corresponding manner.

*To the rear.*—The commands are: **About FACE**. At the command **FACE**, carry the toe of the right foot a half-foot length to the rear and slightly to the left of the left heel without changing

**Fig. IV—Executing Right FACE**



the position of the left foot; weight of the body mainly on the heel of the left foot; right leg straight without stiffness. (TWO) Face to the rear turning to the right on the left heel and on the ball of the right foot, place the right heel beside the left.

### ***Steps and Marchings.***

All steps and marchings executed from the halt, except right step, begin with the left foot.

*Quick Time:* Being at a halt, to march forward in quick time, the commands are: Forward MARCH. At the command Forward, shift the weight of the body to the right leg without perceptible movement. At the command MARCH, step off smartly with the left foot and continue the march with steps taken straight forward without stiffness or exaggeration of movements. Swing the arms easily in their natural arcs, 6 inches to the front and 3 inches to the rear of the body. To halt when marching in quick time, the commands are: Squad HALT. At the command HALT, given as either foot strikes the ground, execute the halt in two counts by advancing and planting the other foot and then bringing up the foot in rear.

To Mark Time the commands are; Mark-Time, MARCH.

Being in march at the command MARCH, given as either foot strikes the ground, advance and plant the other foot, bring up the foot in rear, placing it so that both heels are on line and continue the cadence by alternately raising and planting each foot. The feet are raised 2 inches from the ground.

Being at a halt, at the command **MARCH**, raise and plant first the left then the right as prescribed above.

The halt is executed from mark time as from quick time.

*Half Step.*—The commands are: Half Step **MARCH**. At the command **MARCH**, take steps of 15 inches in quick time. To resume the full step from the half step or mark time the commands are: Forward **MARCH**.

*Side Step.*—Being at a halt the commands are: Right (Left) Step **MARCH**. At the command **MARCH**, carry the right foot 12 inches to the right, place the left foot beside the right, left knee straight. Continue the cadence of quick time. (The side step is executed in quick time from the halt and for short distances only.)

*Back Step.*—Being at a halt the commands are, Backward **MARCH**. At the command **MARCH**, take steps, beginning with the left foot, 15 inches straight to the rear.

*To March to the Flank.*—Being in march the commands are: By The Right (Left) Flank—**MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) in marching and step off in the new direction.

*Oblique March.*—Being in march the commands are Right (Left) Oblique—**MARCH**. At the command **MARCH**, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) oblique in marching and step off in the new direction.

To resume the original direction, the commands are—Forward, MARCH. At the command MARCH each individual faces half left (right) in marching then moves straight to the front.

*Change Step.*—The commands are Change Step, MARCH. Being in march at quick time, at the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, plant the toe of the right foot near the heel of the left and step off with the left foot. (Execute the change on the right foot similarly, the command MARCH being given as the left foot strikes the ground.)

*To the Rear.*—To face to the rear in marching, being in march, the commands are: To The Rear, MARCH. At the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, turn to the right about on the balls of both feet and immediately step off with the left foot.

*Other Marchings.*—March other than at Attention. The commands are: Route Step, MARCH or At Ease, MARCH. Route Step MARCH, at the command MARCH Volunteers are not required to march at attention or to maintain silence. At Ease, MARCH is the same as Route Step, MARCH, except that Volunteers will maintain silence.

*Dismissing the Squad.*—The unit being at a halt the leader calls the unit to attention, if they are not at attention, from a point six paces in front of the center of the unit. He then will give the command—DISMISSED. Volunteers are then free to go and do as they please until the next regularly scheduled drill period.

## ***Forming the Platoon.***

To form the platoon, which consists of 3 squads—the command, **FALL IN** will be given by the senior leader facing the area on which he wishes the platoon to form. At this command the unit will form facing the leader with its center 6 paces to his front in 3 parallel lines (each of these lines constitutes a squad). (Should there be insufficient men to form 3 complete squads, skeleton squads of as near equal number as possible will be formed in 3 ranks, squad leaders placing themselves directly behind one another.)

**Fig. V.—A Platoon in Column of Squads**



*From this formation the unit can march; forward, to the right, or to the left.*

## ***Platoon Movements.***

At the command: Forward MARCH, each man steps off with his left foot directly to his own front preserving his relative position and so regulates his step that the ranks remain parallel to his original front.

At the command: Right (Left) FACE Forward MARCH, the unit executes a right face on the heel of the right foot and ball of the left foot at the word FACE and at the word MARCH they step off with their left foot as in moving to the front. (Left face is performed by turning on the heel of the left foot and the ball of the right foot.) In the movements to the right or left the commander of the unit takes a position three paces in front of the left file of his command, at double time if necessary.

Being in a column to change direction the commands are—Column Right (Left) MARCH. At the command MARCH, given as the right (left) foot strikes the ground the first man of the leading element on the right (left) advances one step and then steps off in the new direction using half steps until the men to his left (right) are abreast of him. Full step is then resumed.

*Close Interval—Normal Interval.*—Being in column of threes at normal interval between squads to March or form at Close Interval, the commands are: Close, MARCH. At the command MARCH, the squads close to the center by



obliquing until the interval between men is 4 inches. The center squad take up the half step until the dress has been regained.

If this movement is executed from the halt, the squads close toward the center by executing Right or Left Step until 4-inch intervals are reached.

Being in column of threes at close interval between squads to March or form at Normal Interval, the commands are: Extend, MARCH. At the command MARCH, the squads open to the right and left from the center by obliquing until the normal interval is regained.

If this movement is executed from the halt, the squads Right or Left Step until normal interval is regained.

*Change Direction.* — Being in column of threes to change direction, the commands are: Column Right (Left) MARCH. The right flank man of the leading rank is the pivot. At the command MARCH, given as the right foot strikes the ground, the right flank man of the leading rank faces to the right in marching and takes up the half step until the other men of his rank are abreast of him, then he resumes the full step. The other men of the leading rank oblique to the right in marching without changing interval, place themselves abreast of the pivot man, and conform to his step. The ranks in rear of the leading rank execute the movement on the same ground and in the same manner as the leading rank.

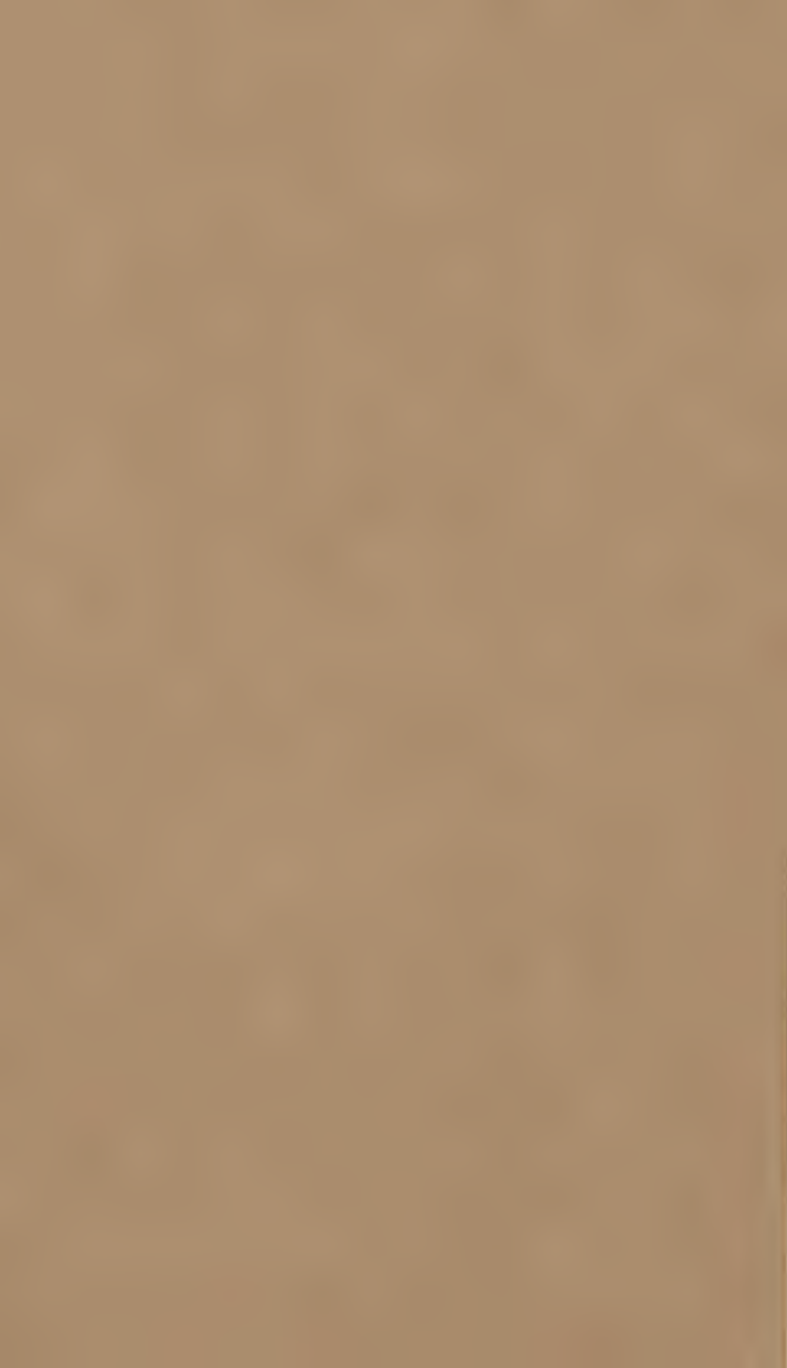
## Fig. VI

### ***Forming the Citizens' Defense Corps for Parade***

(Services will form and move as platoons)

●	Mayor, Defense Coordinator and Dignitaries.
□	Commander, C. D. C.
▬	Staff.
▬	Messengers.
▬	Drivers.
□	Fire Department Chief.
▬	Auxiliary Firemen.
▬	Rescue Squads.
□	Police Department Chief.
▬	Auxiliary Police.
▬	Bomb Squads.
□	Colors.
□	Warden Service Chief.
▬	Air Raid Wardens.
▬	Fire Watchers.
▬	Emergency Food Housing Units.
□	Medical Service Chief.
▬	Medical Field Units.
▬	Nurses' Aides Corps.
□	Public Works Service Chief.
▬	Demolition and Clearance Crews.
▬	Road Repair Squads.
▬	Decontamination Corps.





**OFFICE OF CIVILIAN DEFENSE**

**WASHINGTON, D. C.**

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**OFFICIAL BUSINESS**

**PENALTY FOR PRIVATE USE TO AVOID  
PAYMENT OF POSTAGE, \$300**

*A Handbook for*

# DEMOLITION AND CLEARANCE CREWS



*United States*

OFFICE OF CIVILIAN DEFENSE

*Washington, D. C.*





*A Handbook for*

# DEMOLITION AND CLEARANCE CREWS



Prepared by the Training Section

**U. S. OFFICE OF CIVILIAN DEFENSE**

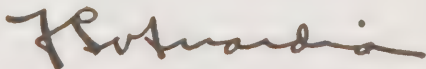
U. S. Government Printing Office, December 1941, Wash., D. C.

# PREFACE

This is one of a series of civilian defense handbooks prepared by the United States Office of Civilian Defense. The purpose of each handbook is to instruct the individual enrolled civilian defense worker in his duties, and to serve as a manual for reference.

The measures for safeguarding civilians against the effects of air attack, which are described in the following pages, have become a necessary part of the defensive organization of any country open to air attack.

Every State and municipality should take such legal or administrative action as may be necessary to provide for the organization, direction, and training of its Demolition and Clearance Crews.



F. H. LaGuardia,  
*U. S. Director Civilian Defense.*

Washington, D. C.  
*December 1941*

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# DEMOLITION AND CLEARANCE CREWS



## ***Chain of Command.***

In the local organization of Civilian Defense, the Demolition and Clearance Crews are usually under the supervision of the Public Works Emergency Division Chief. In communities where a Department of Public Works does not exist an organization should be set up to operate, under one head: The Demolition and Clearance Crews, the Road Repair Crews, and the Decontamination Squads.

These three services work together at all times and operate best under one head, however, each may be organized, trained, equipped, and supervised separately.

## ***Number of Volunteer Demolition and Clearance Crews.***

Demolition and Clearance Crews each consisting of 8 to 12 men are organized for each 4,000 to 5,000 population. These crews are further organized into Truck Companies which consist of two or more crews. In communities of 100,000 or less all truck companies are under the supervision of the Public Works Emergency Division

Chief. In larger communities an assistant may be appointed by the chief, for each 100,000 population. Truck company leaders are appointed by the Public Works Emergency Division Chief or by his assistant. Crew leaders are appointed by truck company leaders.

Truck Companies may not always be organized alike. If necessary several companies will be grouped in order that the following combinations may be affected:

#### *Light*

Superintendent and Blaster.  
Assistant Superintendent-Torch Operator.  
Electric and Gas Experts (2).  
Riggers (4).  
Laborers (High Men) (6).  
Laborers (Ground) (10).

#### *Heavy*

Superintendent and Blaster.  
Assistant Superintendent-Torch Operator.  
Riggers (4).  
Equipment Operators.  
Laborers (High Men) (15).  
Laborers (Ground) (20).  
Dynamite Man.  
Cutting Torch Operator.  
Electrical and Gas Experts (4).

These combinations are only possible in the larger cities. In the smaller communities, companies will be organized in a manner suitable to the tasks with which they will have to deal.

### ***Headquarters for Demolition and Clearance Crews.***

Truck Companies with their trucks and equipment will be stationed at strategic points throughout the community where facilities for repair and



servicing can be secured. Truck Companies should not be quartered close to prominent buildings or oil storage tanks that may be the object of a raid.

### ***Duties.***

You have been selected as a member of a Demolition and Clearance Crew because you are husky, able to work hard long hours in all kinds of weather, possess unusual mental attributes to quickly size up a job and are amenable to discipline.

Each problem will present a new experience to most of you. The tools on hand plus those that can be made available to you on short notice must be put to their best use. Walls should be pulled down or dynamited wherever they are a hazard to life. Craters should be filled in and roads cleared. Rubble will be removed as quickly as possible. Where power shovels or scrapers are not available, hand shovels must be used.

### ***Training Requirements.***

Each member of a Demolition and Clearance Crew is required to be proficient in the following subjects:

1. Fire Defense—3 Hours.
2. Gas Defense—2 Hours.
3. General Course—5 Hours.
4. Drill—2 Hours.
5. Special Course—You will be given special instructions by contractors and engineers, who, from their personal experience will be able to pass on to you many valuable tips.

Leaders will be specialists and will not ask you to perform any job beyond your ability. It is not anticipated that you will be required to take unnecessary risks. Projects that are beyond the skill of Local Demolition and Clearance Crews ability will be abandoned until trained personnel can be secured.

### ***Trucks, Cars.***

It is doubtful if there are very many municipalities that can set aside vehicles equipped to be used for air raid work alone. However, dependable vehicles should be made available and reserve quantities of oil and gasoline stored for emergency use. There will be a driver and an Assistant Driver appointed by the Truck Company Leader for each vehicle.

### ***Equipping the Truck or Car.***

In most cases it will be necessary to obtain Demolition and Clearance equipment by purchase or by loan. This should be stored close to the truck and a supply of fuel and repair parts be made a part of the service load.

#### ***Suggested Equipment:***

Hand truck complete with acetylene tanks, hose, torches, wrenches, striker. (Tent secured to back) goggles.

- Shovels, round end.
- Shovels, square end.
- Shoring poles.
- Picks.
- Matcocks.
- Crowbars, long.
- Wrecking bars.

Pinch bars.  
Axes.  
Rope, 1½", 500 ft.  
Cable, 1" steel, 200 ft.  
Sledge hammer, 10-12 lb.  
Wheelbarrows.  
Dynamite.  
Rope, ½" and signs to rope off danger area.  
Ladders—various.  
Detonator.  
Dynamite caps.  
Heavy work gloves.  
Gloves, rubber.  
Set of rope tackle, 3 sheave.  
Single sheave snatch block.  
Jacks (2) 10-15 ton lift.  
Crosscut saws. 2-handled.  
Box of miscellaneous tools, spikes, wedges,  
etc.  
Tools to shut off gas and water at curb or  
meter.  
Electric cable.  
Lamps, 250-500 watts.  
Saws—carpenters, hack, cross-cut.

The amount of equipment allocated for Demolition and Clearance Crews should be based on the probable needs of the community.

### ***Other Machinery—Tractors, Bulldozers, Etc.***

A tractor with a scraping attachment or a bulldozer is almost indispensable for cleaning up debris and should be available in every community.

For fast transportation a truck with a ramp will speed up delivery of slow-moving equipment to the scene of an incident.

Cities that are able to provide all this equipment will be the exception rather than the rule. It is not anticipated that every community will



at once purchase everything that might be needed, however, every attempt should be made to secure a good supply of the simpler tools that will do the job efficiently by substituting hand power for mechanical horsepower.

Vehicles when available:

Truck with winch and searchlight (2-ton).

Crew trucks  $2\frac{1}{2}$ -ton.

Dump trucks,  $1\frac{1}{2}$ -ton.

Motor-truck cranes.

### ***Duties Preliminary to An Air Attack.***

After your crew and truck company is organized it will be necessary for you to study the various systems for providing water, gas, and electricity and methods of cutting off these utilities in buildings to be demolished. Call on the Utilities Repair Squads if time permits.

Vehicles should be kept loaded at all times except when they are used for other purposes. Have a place for everything and keep everything in its place. Practice loading vehicles and answering calls.

### ***Delayed-Action Bombs.***

Bombs, other than incendiary bombs, that fall near where you are working will be reported to the nearest Air Raid Warden at once. When they fail to explode, if your crew is working within the danger area, work will be stopped at once and the crew and equipment withdrawn to a safe distance.



## ***After the Raid.***

Your truck company will be assigned certain specific sections to clean up. Upon receipt of orders you will proceed to that section, with all your equipment and prepare to raze any structures found to be in precarious condition.

After certain information is secured from the Warden-in-Charge, that there are no living or dead in any part of the buildings to be razed, the water, gas, and electric services will be cut off, if possible, and the work begun.

Sections of wooden or frame homes and buildings should be wrecked toward the area formerly occupied by the structure. Brick buildings should be wrecked toward the area formerly occupied by the structure unless there is a demand for brick to fill in holes in the vicinity, then they will be wrecked toward the street or road where the rubble can be easily handled. Fallen parts of buildings will be kept from obstructing walks and streets as much as possible. Brick, stone, and lumber may be cleared from the adjoining walks and streets by scraper, power shovel, or by hand.

Care should be taken not to fill in any holes if there are broken mains or cables. Traffic should be detoured around such holes until repairs are completed by the Utilities Repair Squads.

Steel girders should be removed in one piece if possible. Acetylene cutting will only be resorted to when it is certain that there is no other alternative. Sections will be cut as long as is consistent with easy handling and conservation of material.

Multistoried buildings hit by high explosive bombs may be saved in part. It may be possible



to remove one or more top floors and leave the remainder intact. Unless there is an extensive area beside the building where materials can be dropped, the damaged materials should be razed on the structure itself and then removed by the building elevator or an improvised elevator or chute. Care must be taken not to overload floors. Fissures in walls must be carefully inspected to determine whether parts of buildings can be saved.

Trucks and cars smashed by falling buildings should be removed with the least possible additional damage. Rubble should be removed from them by hand. If they will not start or move under their own power they should be hauled away.

Animals killed or injured by debris should be removed as soon as possible from the populated section and turned over to those experienced in their disposal.

Should you encounter gas, work will immediately be stopped. If there is no further work for you in the vicinity your headquarters should be contacted to ascertain if there is work elsewhere.

### ***Acetylene Torches.***

When possible acetylene torches should be available to Demolition and Clearance Squads. Fallen girders and beams will constitute a barrier to work. These will have to be cut or a great deal of time spent in detaching or removing entire sections of metal. A vehicle of some sort, capable of being wheeled into difficult places should be devised to transport tanks, hose, and

torches. A sufficient supply of gas should be kept on hand to meet emergencies.

Metal cutting torches, in the hands of experts of the Demolition and Clearance Squads, can assist the fire fighting and rescue teams materially. Care should be exercised to prevent the starting of fires during cutting operations and not to place tanks where they will be crushed by falling walls or come in contact with high temperatures. Tanks have been known to explode with the force of a bomb. **DO NOT USE ACETYLENE WHERE OIL IN ANY FORM IS PRESENT.**

No attempt should be made to cut girders and beams to any size other than that necessary for easy loading and disposal.

### ***Explosives.***

Explosives will be handled by experienced blasters only. If one is not available the work will be accomplished in some other manner or the work will be abandoned, the area evacuated, roped off, and guards posted.































### ***Using Tools and Equipment.***

All equipment, chisels to motor cars, perform best through long and hard usage when properly conditioned. During periods of operation and while waiting for calls, no opportunity should be passed up to recondition and tune up equipment.

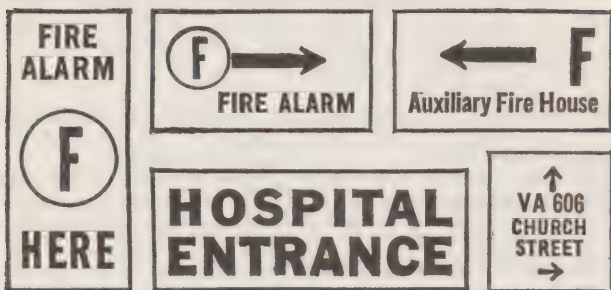
As some machinery is equipped with steel wheels, care will be exercised not to let them come in contact with power lines that might be down. Serious and fatal burns and shocks are frequently caused by neglecting this precaution.

## Standard Symbols for Maps.

Use these standard symbols on all maps—they are intended to make clear the facts you and others will need to know in a hurry.

 Warden's Post	 Bomb Crater
 Fire Watcher's Station	 Roped-off Area
 Fire Alarm	 Street Car Tracks
 Telephone	 Double Tracks
 Air Raid Shelter	 Cisterns or Water Reserves
 Gas-Proof Air Raid Shelter	 Sector Limits
 Entrance to Shelter	 Zone Limits
 Fire Station	 Site of Gas Bomb
 Decontamination Squad Depot	 Contaminated Area (For large area, blue cross-hatch)
 Repair Squad	 Street Lamp
 Casualty Station	 Fire Hydrant
 Decontaminating First Aid Station	 Sewer Gratings
 Bomb Squad Station	 Manhole
 Location of Incident (Show number in center)	 Tree
 Demolished Building	 Sandbags

## ***Types of Direction Signs.***



***This Page is for Notes***

***This Page is for Notes***

***This Page is for Notes***



***This Page is for Notes***

***This Page is for Notes***

***This Page is for Notes***

***This Page is for Notes***

***This Page is for Notes***

***This Book Belongs to:***

-----  
(First name)

(Initial)

(Last name)

***My Home Address Is:***

-----  
-----

***My Telephone Number Is:***

-----

***or***

***My Home Can Be Reached by calling*** -----

***Demolition and Clearance Crew No.*** -----

***Truck Company No.*** -----

***In case of emergency, notify:***

-----  
-----

***City*** ----- ***State*** -----



# BLACKOUTS

Blackouts are ordered only on the authority of the War Department. A blackout may be ordered during any period when hostile forces are believed to be in the vicinity, whether or not enemy airplanes have been sighted.

**"Blacking Out"** a city means that light sources must be so hidden or dimmed that an enemy bomber will have difficulty in finding the target and lack aiming points such as main street intersections. Following are the general plans used.

**Street Lights.** These are fitted with low-watt bulbs and covers that diffuse the light.

**Automobiles.** Headlights must be covered except for a small pair of slits and hooded.

**Traffic Lights.** Are treated the same way as automobile headlights.

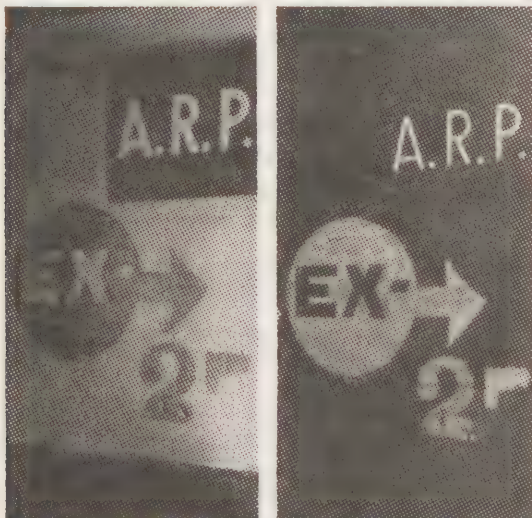
**Buildings.** Windows and doors must be covered with opaque materials. Paint on the glass, heavy curtains, light "baffles" or screens are some of the ways. No cracks of light must show.

**Aids to Seeing.** Since people have to move about during a blackout, the lack of light may be somewhat offset and safety promoted by—



1. Painting curbs, trees, poles and hydrants with white paint. There is a luminous paint, also, that gives off a faint blue light quite visible in total darkness.

2. Painting signs of luminous paint or making them of fluorescent material on which shines ultra-violet or "black" light or installing dimly lighted signs with horizontal screens to diffuse the light.



3. Painting white fenders and stripes around automobiles.

Members of the Citizens' Defense Corps who have outside duties during a blackout can be identified more easily if they wear a white cap or white-painted helmet; also a white belt fitted with crossed straps over the shoulders.



## ***Individual Conduct During a Blackout.***

Observe traffic rules. Keep to the right and remember the man or vehicle approaching *from* your right *has* the right of way.

If you must smoke, go into a hallway or covered place to strike the match. No smoking in the open is an even better rule. Make all crossings at intersections. It is hard for a driver to see you.

Be sure that everyone you know is acquainted with these simple rules.



**DO NOT** run when air raid warnings sound after dark during blackouts.



Use your flashlight as little as possible, if at all. Never point it upward.



Curb edges and direction signs painted white will help you find your way.



Keep pets on leash if you take them out after dark.



If an air raid warning sounds, get under cover, you may be hit by shell fragments.



If you don't know the neighborhood the first policeman or warden will tell you where to go.





## ARMY

When an observer sights a group of hostile planes, he picks up his telephone (1) and says *Army Flash*. The Central Operator (2) at once connects him with the assigned Filter Center (3) to which he reports the type of planes, number, height, and direction of flight. When several reports agree, watchers transmit the data to an Information Center (4) where developments over a large area are plotted on a huge map.

Watching the map, Air Corps officers order interceptor planes into the air, (5) direct them to contact with the enemy; another officer notes the cities threatened and flashes a yellow, blue, or red alarm, according to the degree of danger, to the proper Warning District Center (6).

At this point, Civilian Defense takes over from the Air Corps, telephones the warnings to Control Centers (7) within the Warning District. And here the Commander of the local Citizens' Defense Corps orders the alert, has the public warning sounded usually short blasts on air horns, power horns or steam whistles or on the wailing sirens—and if the bombers arrive overhead, directs the operation of passive defense. Learn the air raid warning for your city.

## FLASH





The Refuge Room

## WHAT TO DO IN AN AIR RAID

At the yellow warning, if you are not already on duty, you will be summoned to your post and will carry out orders until relieved. However, here are the rules for those who do not have assigned duties when the air raid warning comes. Memorize them carefully so that you can in turn instruct others. Here is what to tell them:

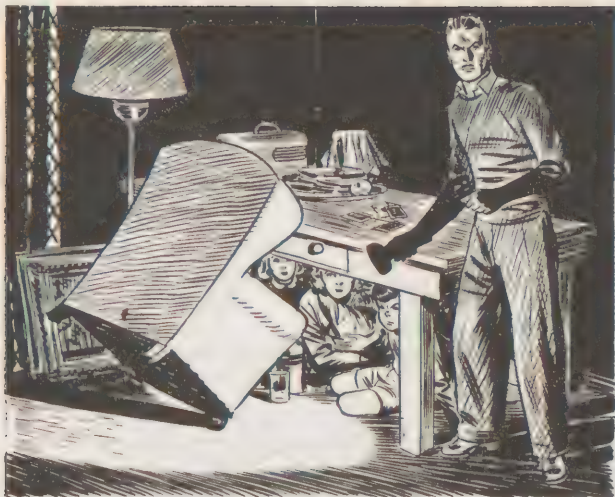
1. If away from home, seek the nearest shelter. Get off the street.

2. If you are driving, first park your car at the curb; be sure all lights are shut off.

3. If you are at home, send the others to the refuge room. This should be a comfortable place with as little window exposure as possible, equipped with drinking water, things to read, toilet facilities, a flashlight, a portable radio, a sturdy table, and food if you like.

4. Turn off all gas stove burners but leave pilot lights, water heaters and furnaces alone. Leave electricity and water on. Fill some large containers or a bathtub with water.

5. Check up on blackout arrangements. Don't let a crack of light show to the outside.



6. See that everyone's eyeglasses and dentures are in the refuge room. There should be additional warm garments for everyone, too.

7. Keep out of line of windows. Fragments and glass splinters cause most casualties.

8. If bombs fall nearby, get under a heavy table, an overturned davenport.

9. Don't rush out when the "all clear" signal sounds. Maintain the blackout. The Raiders may return.

10. Otherwise, keep cool; be sensible and set an example to others.

## FIRE DEFENSE

IT WILL BE VERY DIFFICULT TO FIGHT A MAGNESIUM BOMB UNLESS SOME WORK IS DONE BEFORE THE ATTACK



ALL FURNITURE TRUNKS AND JUNK OF ALL KINDS SHOULD BE REMOVED FROM ATTIC OR TOP FLOOR!

ROOF BEAMS JOISTS AND STUDS CAN BE TREATED TO RESIST FLAME — GIVING MORE TIME TO REACH THE BOMB



PAIN'T DOES NO GOOD! A HEAVY COAT OF ORDINARY WHITEWASH HELPS SOME



# HOW THE MAGNESIUM BOMB WORKS

**THE MOST EFFECTIVE  
INCENDIARY BOMB  
MADE SO FAR  
IS THE  
MAGNESIUM  
BOMB**



LENGTH, ABOUT 14" WEIGHT, 2.2 POUNDS

**A LARGE BOMBER  
CAN CARRY 1000  
SUCH BOMBS!**



**THEY ARE USUALLY RELEASED  
20 TO 50 AT A TIME, SPREAD  
LIKE SHOT BEFORE STRIKING.**

**DROPPED FROM A HEIGHT OF 20,000  
FEET, THEY DEVELOP ENOUGH FORCE  
TO PENETRATE AN AVERAGE ROOF...**



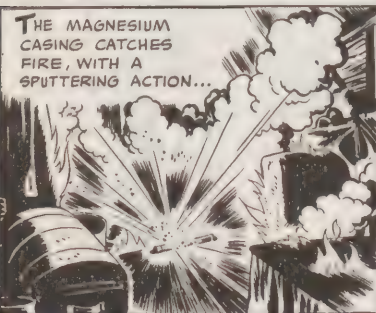
**...THUS, THEY USUALLY START BURNING  
IN A TOP STORY OR ATTIC**

**THE THERMITE FILLING OF  
IRON OXIDE AND FINELY DIVIDED  
ALUMINUM IS THEN IGNITED AND  
DEVELOPS A FIERCE HEAT OF  
OVER 4500 DEGREES!**



**THE FLAME ROARS OUT OF THE  
ESCAPE HOLES.**

**THE MAGNESIUM  
CASING CATCHES  
FIRE, WITH A  
SPUTTERING ACTION...**



**...FLAMING MOLTEN METAL IS THROWN  
ABOUT AND SURROUNDING INFLAMMABLE  
MATERIAL CATCHES FIRE**

**IF NOT QUICKLY  
QUENCHED, THE  
BOMB WILL BURN  
THROUGH THE  
FLOOR, SETTING  
ADDITIONAL  
FIRES ON  
THE FLOOR  
BELOW...**



**BUT, WITH PROMPT  
ACTION AND SIMPLE  
TOOLS, A MAGNESIUM  
BOMB CAN BE QUENCHED!**

# CONTROLLING WITH WATER

TO FIGHT A BOMB WITH WATER, YOU NEED TWO MEN AND SPECIAL EQUIPMENT. REMEMBER, YOU CAN'T PUT OUT THE BOMB — YOU FEED IT WATER, TO BURN OUT!

ONE MAN PUMPS 80 STROKES A MINUTE TO KEEP A STRONG ENOUGH PRESSURE TO THROW A JET 30 FEET, AS SPRAY, 15 FEET. ONE MAN FIGHTS THE FIRE.

YOU USE UP A BUCKET IN 1½ MINUTES



SPECIAL DOUBLE ACTION PUMP WITH 30 FEET OF HOSE AND SPECIAL NOZZLE NEEDED.



JET ON SURROUNDINGS!



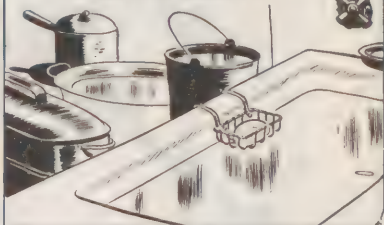
SPRAY ON BOMB

A THIRD PERSON IS MOST USEFUL TO CHECK OTHER POINTS FOR FLAME REPLENISH WATER AND RELIEVE PUMPER.



AMPLE STORAGE OF WATER SHOULD BE PROVIDED IN ADVANCE, AS WATER MAINS MAY BE BROKEN BY HIGH EXPLOSIVES AND PRESSURE LOST! FILL THE TUB, EXTRA PAILS AND DON'T FORGET IN A PINCH —

THE CONTENTS OF HOT WATER OR HEATING BOILERS!



NEVER THROW THE CONTENTS OF A WATER PAIL ON A BOMB!



...IT WILL SCATTER WITH EXPLOSIVE VIOLENCE!

IF CONTROL OF THE BOMB SEEMS DOUBTFUL, HAVE AN ALARM TURNED IN, BUT CONTINUE FIGHTING THE BOMB UNTIL HELP ARRIVES OR SUPPLIES ARE EXHAUSTED!



1 LEARN NOW HOW TO CALL



2 LEARN NOW LOCATION OF NEAREST ALARM...

MILTON CANIFF

# CONTROLLING WITH SAND

**APPROACH THE BOMB IN A CROUCHING OR CRAWLING POSITION. PLACE THE SAND BUCKET, UPSET, TO ALLOW A FULL-ARM SWING TOWARD THE BOMB**



**TRY TO COVER THE BOMB WITH DRY SAND, TO CONFINE IT'S ACTION, SO THAT YOU CAN GET NEAR ENOUGH TO SCOOP IT UP ON THE SHOVEL**



**WHEN THE BOMB IS UNDER FAIR CONTROL, SCOOP IT UP ON THE SHOVEL, FIRST RIGHTING THE BUCKET, BUT LEAVING SOME SAND IN THE BOTTOM...**



**...IF THE BOMB CAN BE DROPPED FROM A WINDOW TO SOME PLACE WHERE IT CAN BURN OUT WITHOUT HARM —**

**GET RID OF IT THAT WAY!**



**... OTHERWISE, PUT IT IN THE BUCKET ON TOP OF SAND, COVER IT WITH MORE SAND ...**



**... THEN, HOLDING THE BUCKET ON THE SHOVEL, CARRY IT OUT OF THE HOUSE ...**







## ABOUT FIRE EXTINGUISHERS

Many houses and public buildings have fire extinguishers. They will be as useful as ever in putting out fires caused by an incendiary bomb. For putting out the bomb itself, the extinguisher may not be suitable.

Read the label. If it says that the contents include **CARBON TETRACHLORIDE**, it cannot under any circumstances be used on a magnesium bomb. It is not only ineffective, it may cause dangerous gas to be generated. After the bomb is burnt out, use it on any remaining fire.

All water-type extinguishers are suitable. If the label says **SODA-ACID**, that's simply a means of creating pressure in the extinguisher. Turn it upside down, use it. You can get a spray effect by putting the thumb over the nozzle, use the jet on surrounding fires. However, *one extinguisher is not enough to burn out a magnesium bomb*. And you cannot refill the extinguisher.

It is best to have sand or pump-bucket equipment handy, use them on the bomb, and save the extinguishers for resulting fires.

A foam extinguisher will also help to control a bomb, but one extinguisher load will not finish the job.

See that the extinguishers you know about are ready for use.

# CHEMICAL WARFARE AGENTS

## REFERENCE AND TRAINING CHART

32

LEGEND

			
HOSPITAL CASE	FIRST AID STATION	LUNG PROTECTION NEEDED	COMPLETE PROTECTION NEEDED




























The importance of proper first aid for gas victims cannot be overemphasized. The following are general rules which apply in all cases.

- Act promptly and quietly; be calm.
- Put a gas mask on the patient if gas is still present or, if he has a mask on, check to see that his is properly adjusted. If a mask is not available, wet a handkerchief or other cloth and have him breathe through it.

- Keep the patient at absolute rest; loosen clothing to facilitate breathing.
- Remove the patient to a gas-free place as soon as possible.

E. Summon medical aid promptly; if possible, send the victim to a hospital.

F. Do not permit the patient to smoke, as this causes coughing and, hence, exertion.

CLASS	NAMES AND SYMBOLS	FORM	ODOR	PERSISTENCE	TACTICAL CLASS	PROTECTION	FIRST AID (After removal from gassed area)	PHYSIOLOGICAL EFFECT
VESICANTS	MUSTARD <small>RS-CHLORIDE, SULFONE</small> <chem>SC(CH2CH2)2Cl</chem>	LIQUID AND VAPOR	 Sulfur, Mustard-like, Mustard	One day to one week. Longer if dry or cold.			Undress; remove liquid mustard with wetting oil; wash eyes and face with soda solution.	Delayed effect. Burns skin or mucous membrane. Inflammation respiratory tract leading to pneumonia. Eye irritation, conjunctivitis.
	LEWISITE <small>CHLORINATED-ARSENIC ACID</small> <chem>CHClCH2AsCl2</chem>	LIQUID AND VAPOR	 Asphyxiant	One day to one week. Longer if dry or cold.			Undress; remove liquid Lewisite with hydrogen peroxide, lye in glycerine, or kerosene; bathe; wash eyes and nose with soda. Rest—Doctor.	Burning or irritation of eyes, nasal passages, respiratory tract, skin. Muscular poison.
LUNG IRRITANTS	CHLORPICRIN <small>ETHYLENE DIBROMIDE</small> <chem>CClBr2</chem>	GAS	 Fragrant, spicy	Open 6 hours. Wounds 12 hours.			Wash eyes, keep quiet and warm. Do not use bandages.	Causes severe coughing, crying, vomiting.
	DIPHOSGENE <small>TOXIC DIBROMIDE, CARBOHYDRATE</small> <chem>ClCOC(=O)Cl</chem>	GAS	 Fragrant, acid	100 minutes.			Keep quiet and warm. Limit coffee as a stimulant.	Causes coughing, breathing hurts, eyes water, tears.
LACRIMATORS	PHOSGENE <small>CARBONYL CHLORIDE</small> <chem>COCl2</chem>	GAS	 Musty, like new cars	10 to 30 minutes.			Keep quiet and warm. Bed rest. Coffee as a stimulant. Loosen clothing. No alcohol or cigarettes.	Irritation of lungs, occasional vomiting, tears in eyes, dizziness, occasionally symptoms delayed. Later, collapse, heart failure.
	CLORACETOPHENONE <chem>C6H5COCH2Cl</chem>	GAS	 Apple blossoms	100 minutes.			Wash eyes with cold water or pure acid solution. Do not bandage. Face mask. For skin, sodium sulphite solution.	Makes eyes smart. Shut tightly. Tears flow. Temporary.
STERNUTATORS	BROMBENZYL CYANIDE <chem>C6H5CH2CN</chem>	GAS	 Sour fruit	Several days. (Weeks in winter.)			Wash eyes with bore acid. Do not bandage.	Eyes smart, shut, tears flow. Effect lasts some time. Headache.
	ADAMSITE <small>DIPHENYLAMINE CHLORIDE</small> <chem>(C6H5)2NCl</chem>	GAS	 East Smoke	10 minutes.			Keep quiet and warm. Loosen clothing. Reassure. Spray nose with non-spirituous or salt bleaching powder. Aspirin for headache.	Causes sneezing, skin depressed feeling, headache.
	DIPHENYL CHLORARSINE <chem>(C6H5)2AsCl</chem>	SMOKE	 East Smoke	Summer 10 minutes.			Remove to pure air, keep quiet. Rinse clothing from bleaching powder bottle.	Causes such feeling and headache.

# WAR GASES

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## ***General Notes.***

War "Gases," or chemical agents used to produce casualties, are surprise weapons. As this is written, they have not been used against the British or others trained to protect themselves. They have been used against the Ethiopians and the Chinese.

A gas-tight room suitably located offers fair protection against any probable concentration of war gas in a city. For those whose duties take them into the streets a gas mask offers full protection against all but the "blister gases" (liquid vesicants). To enter areas where mustard or lewisite is present, full protective clothing is needed.

War gases may be dropped in bombs or simple containers and liquid vesicants may also be sprayed by airplanes.

The gas warning is a "percussion sound"—that is, bells, drums, hand rattles, rapidly struck resonant objects of any kind. If the presence of gas is suspected, report to the nearest warden. Do not shout if distant gas alarms are heard. The danger is local and the spreading of an alarm must be left to the wardens.

The notes on the following pages are simply for reference for those who have received instruction in protection against gas. Reading them will not by itself make you an expert in gas defense.



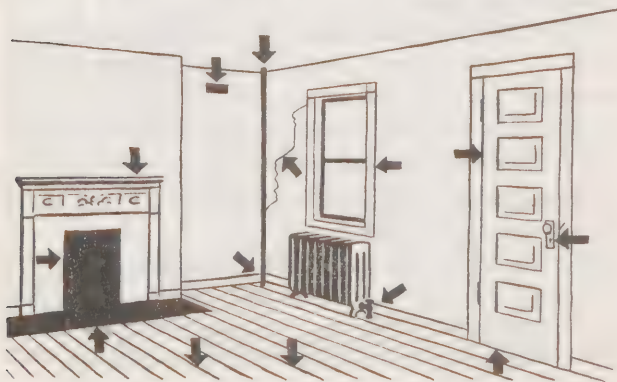
# THE GAS-TIGHT ROOM

War gases hug the ground, flow into cellars and basements. Upper floors of a dwelling are away from dangerous concentrations. If all openings and cracks are closed, a room three stories from the ground will offer good protection against war gases.

To stop cracks and small openings, tape of various kinds may be used. A mush made by soaking newspapers in water or patching plaster may be used for caulking larger openings. A piece of wall board, nails and caulking material may be kept handy to cover a window broken by the blast of high explosives.

One door may be used as an entrance by fastening over it a blanket in such a way as to seal it tightly when no one is going in or out. If soaked in oil to close the air spaces, the blanket is more effective.

Store necessary supplies in such a room—food, water, chairs, a battery-operated radio, flashlight and by all means provide some sort of toilet facilities use it as the refuge room.



Allow 20 square feet of floor space for each person who is to occupy an average room with a ceiling nine feet high. This will give enough air to occupy the room 10 hours.

The illustration shows where to stop up cracks, how to hang the blanket at the entrance door.

## ***“Blister Gases” and Decontamination.***

Lewisite and mustard “gas” are liquids in the normal state. They give off a dangerous vapor that acts as a war gas and unless chemically neutralized may persist for a week, contaminating the air for a considerable distance down wind.

Full protection against these chemical agents is afforded by gas-proof clothing, covering the wearer from top to toe and tightened at wrists and ankles. The greatest care must be used in undressing after exposure to lewisite or mustard and this is done at personnel decontamination stations, where vesicant casualties are also taken for first aid.

Decontamination of streets, walls, and buildings is effected principally by means of chloride of lime (bleaching powder) freshly mixed with earth and water as a slurry or paste. It must be thoroughly worked into cracks and crevices and the resulting product flushed away. This work is done by the decontamination squads.

The liquid vesicants are very penetrating and ordinary shoes or clothing offer no protection. Do not go into the streets after a gas alarm has been sounded except on direction of the Warden.

RANK DESIGNATION	▲	▲▲	▲▲▲	▲▲▲▲	△	△△	△△△	★	★★	★★★	★★★★	★★★★★
AIR RAID WARDEN	FIRST CLASS	SENIOR OR SECTOR WARDEN			GROUP LEADER	CHIEF WARDEN	STATE WARDEN	NO OTHER RANKS				
AUXILIARY FIREMEN	"	SQUAD LEADER	ZONE LEADER	PLATOON LEADER	COMPANY LEADER	FIRE CHIEF	STATE FIRE COORDINATOR	NO OTHER RANKS				
AUXILIARY POLICEMEN	"	"	"	"	"	CHIEF OF POLICE	NO OTHER RANKS					
BOMB SQUADS	"	"	"	NONE	"	"	NO OTHER RANKS					
RESCUE SQUADS	"	"	"	DEPOT LEADER	"	FIRE CHIEF	NO OTHER RANKS					
MEDICAL FIELD UNITS	"	TEAM LEADER	SQUAD LEADER	UNIT LEADER	CHIEF OF E M S	STATE MEDICAL DIRECTOR	NO OTHER RANKS					
MEDICAL AUXILIARIES (stretcher teams)	"	"	"	"	NO OTHER RANKS							
NURSES' AIDES												
EMERGENCY FOOD AND HOUSING												
DRIVERS UNITS												
MESSENGERS												
ROAD REPAIR CREWS												
DEMOLITION AND CLEAR.												
DECONTAMINATION SQUADS												
FIRE WATCHERS												
REPAIR CREWS												
LOCAL STAFF												
STATE STAFF												
U. S. STAFF												
EQUIVALENT ARMY TERM	PVT 1st CLASS	NON-COMM. OFF.	LIEUTENANT	CAPTAIN	MAJOR	COLONEL	LIEUT. GEN	MAJ GEN	LIEUT GEN	GENERAL		

# CITIZENS' DEFENSE CORPS

The team of trained civilian services organized to operate the passive defense is known as the Citizens' Defense Corps. It includes regular forces of the city—police, firemen, welfare workers, sanitation men—as well as volunteers. It operates as a unit under the local Defense Coordinator.

## *Staff.*

The Citizens' Defense Corps is headed by a Commander assisted by a staff. His second in command is the Executive Officer. There are others who operate the control center and the communications, account for personnel and property and assign transportation. The Chiefs of the Fire and Police Departments assist him in the passive defense. There is a Chief Air Raid Warden, a Chief of Emergency Medical Services, and others who control groups of the enrolled volunteers. Learn the organization of the Citizens' Defense Corps in your community.

## ***Enrolled Volunteer Services of The Citizens' Defense Corps.***



Air Raid Wardens are in complete charge of a sector containing the homes of about 500 people. To them the warden is the embodiment of all Civilian Defense.



Auxiliary Firemen assist the regular fire-fighting forces.



Auxiliary Policemen assist the police department in enforcing blackout restrictions, in traffic control, and in guard duties.



Bomb Squads are specially trained squads of police to handle and dispose of time bombs and duds.



Rescue Squads are trained crews of about 10 men each with special equipment to rescue the injured from debris.



Medical Forces consist of first-aid parties and stretcher squads and personnel at casualty clearing stations. Members of these forces are doctors, trained nurses, and assistants.



Nurses' Aides assist nurses. They have special Red Cross Training.



Emergency Food and Housing Corps members provide welfare services to the needy and homeless.



Drivers Units consist of emergency drivers of vehicles used by the Civilian Defense services.



Messengers carry supplies, dispatches, and messages wherever needed.



Road Repair Crews restore normal flow of traffic as quickly as possible. Utility repair men work with these crews and with demolition squads.



Demolition and Clearance Crews remove rubble, fill bomb craters, and remove unsafe walls or parts of buildings.



Decontamination squad members are specially trained to treat clothing and equipment as well as streets and walls contaminated by war gas.



Fire Watchers must spot and combat incendiary bombs.



# A MANUAL OF DRILL

*for the*

## CITIZENS' DEFENSE CORPS

*Adapted from the Basic Field Manual of the  
United States Army*

Basic drill is required of a volunteer for award of the insigne. Drill for units of the Citizens' Defense Corps, moreover, is recommended as it helps to coordinate the work of individuals under a single command. The purposes of drill are:

**1** To enable a leader to move his unit from one place to another in an orderly manner.

**2** To aid in disciplinary training by instilling habits of precision and response to the leader's orders.

**3** To provide a means, through ceremonies, of enhancing the morale; develop a spirit of cohesion; and give an interesting spectacle to the public.

**4** To give leaders practical training in commanding volunteers.

*Drills should be frequent, intensive, and of short duration.*



## **General.**

A normal squad of volunteers contains 12 men or 12 women, all of one service. It consists of a leader, an assistant leader, and other personnel. As far as practicable, the squad is kept intact. The usual formation of the squad is a single rank or single file. This permits variations in the number of men composing the squad.

## **To Form the Squad.**

The command is; **FALL IN.** At the command **FALL IN** the squad forms in line as shown. Squad leader on the squad's extreme right, assistant leader on the squad's extreme left.

To secure uniformity, the tallest leader is put in charge of the first squad, the second tallest in charge of the second squad, etc. Assistant

**Fig. I—A Squad in Line**

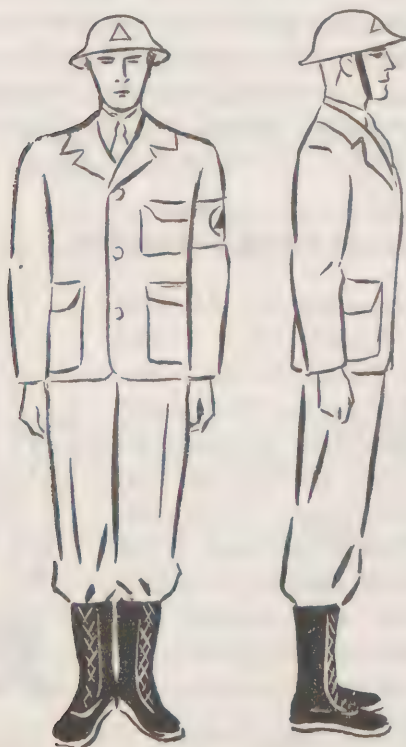


leaders are similarly arranged. Other volunteers are placed according to height beginning with the tallest being placed next to the leader.

On falling in, each man except the one on the left extends his left arm laterally at shoulder height, palm of the hand down, fingers extended and

joined. Each man, except the one on the right, turns his head and eyes to the right and places himself in line so that his right shoulder touches lightly the tips of the fingers of the man on his right. As soon as proper intervals have been obtained, each man comes to attention, drops his arm smartly to his side and turns his head to

Fig. II—A Volunteer at Attention



the front, heels are together, feet forming a right angle; knees are straight without stiffness, hips level and drawn back slightly, body erect and resting equally on hips, chest lifted and arched, shoulders square and falling equally. Arms hang straight down without stiffness with the back of the hands out, fingers held naturally. Head erect and squarely to the front, chin drawn in so that the axis of the head and neck is vertical, eyes straight to the front. The weight of the body rests equally on the heels and the balls of the feet. In assuming the position of attention the heels are brought together smartly and audibly.

(Leaders and assistant leaders will be appointed under authority defined by the Chief of the Service of which the squad forms a part.

### ***To Form at Close Intervals.***

The commands are: At Close Interval, **FALL IN**. At the command **FALL IN**, the volunteers fall in as described above, except that close intervals are obtained by placing the left hands on the hips. In this position the heel of the palm of the hand rests on the hip, the fingers and thumb are extended and joined, and the elbow is in the plane of the body.



**Fig. III—A Volunteer Falling in at Close Interval**

## ***To Aline the Squad.***

If in line, the commands are: Dress Right, DRESS, Ready, Front. At the command DRESS, each man except the one on the left extends his left arm (or if at close interval, places his left hand upon his hip), and all aline themselves to the right. The instructor places himself on the right flank one pace from and in prolongation of the line and facing down the line. From this position he verifies the alinement of the men, ordering individual men to move forward or back as is necessary. Having checked the alinement, he faces to the right in marching and moves three paces forward, halts, faces to the left and commands: Ready, FRONT. At the command FRONT, arms are dropped quietly and smartly to the sides and heads turned to the front.

## ***Rests.***

Being at a halt the commands are: FALL OUT, REST, AT EASE, and PARADE REST.

At the command FALL OUT, volunteers leave the ranks but are required to remain in the immediate vicinity.

At the command REST, one foot is kept in place. Silence and immobility are not required.

At the command AT EASE the right foot is

kept in place. Silence but not immobility is required.

At the command of execution **REST** of Parade **REST**, move the left foot smartly 12 inches to the left of the right foot keeping the legs straight so that the weight of the body rests equally on both feet. At the same time, clasp the hands behind the back, palms to the rear, thumb and fingers of the right hand clasping the left thumb without constraint; preserving silence and immobility.

Being at any of the rests except **FALL OUT**, to resume the position of Attention, the commands are Squad (or other unit being commanded) **ATTENTION**. At the command **ATTENTION** take that position in your squad.

### ***Eyes right (left).***

The commands are: Eyes (Preliminary Command), **RIGHT** (Command of Execution) (**LEFT**) Ready **FRONT!** At the command **RIGHT**, each man turns his head and eyes to the right. At the command **FRONT** the head and eyes are turned to the front.

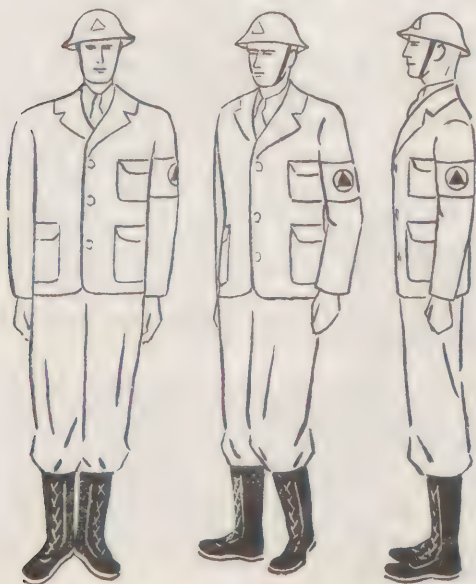
## ***Facings.***

*(All Facings are executed at the halt.)*

*To the flank.*—The commands are **Right (Left) FACE**. At the command **FACE**, slightly raise the left heel and the right toe: Face to the right, turning on the right heel, assisted by a slight pressure on the ball of the left foot. Next, place the left foot beside the right. Exercise **Left FACE** on the left heel in a corresponding manner.

*To the rear.*—The commands are: **About FACE**. At the command **FACE**, carry the toe of the right foot a half-foot length to the rear and slightly to the left of the left heel without changing

**Fig. IV—Executing Right FACE**





the position of the left foot; weight of the body mainly on the heel of the left foot; right leg straight without stiffness. (TWO) Face to the rear turning to the right on the left heel and on the ball of the right foot, place the right heel beside the left.

### ***Steps and Marchings.***

All steps and marchings executed from the halt, except right step, begin with the left foot.

***Quick Time:*** Being at a halt, to march forward in quick time, the commands are: Forward MARCH. At the command Forward, shift the weight of the body to the right leg without perceptible movement. At the command MARCH, step off smartly with the left foot and continue the march with steps taken straight forward without stiffness or exaggeration of movements. Swing the arms easily in their natural arcs, 6 inches to the front and 3 inches to the rear of the body. To halt when marching in quick time, the commands are: Squad HALT. At the command HALT, given as either foot strikes the ground, execute the halt in two counts by advancing and planting the other foot and then bringing up the foot in rear.

To Mark Time the commands are; Mark-Time, MARCH.

Being in march at the command MARCH, given as either foot strikes the ground, advance and plant the other foot, bring up the foot in rear, placing it so that both heels are on line and continue the cadence by alternately raising and planting each foot. The feet are raised 2 inches from the ground,

Being at a halt, at the command MARCH, raise and plant first the left then the right as prescribed above.

The halt is executed from mark time as from quick time.

*Half Step.*—The commands are: Half Step MARCH. At the command MARCH, take steps of 15 inches in quick time. To resume the full step from the half step or mark time the commands are: Forward MARCH.

*Side Step.*—Being at a halt the commands are: Right (Left) Step MARCH. At the command MARCH, carry the right foot 12 inches to the right, place the left foot beside the right, left knee straight. Continue the cadence of quick time. (The side step is executed in quick time from the halt and for short distances only.)

*Back Step.*—Being at a halt the commands are, Backward MARCH. At the command MARCH, take steps, beginning with the left foot, 15 inches straight to the rear.

*To March to the Flank.*—Being in march the commands are: By The Right (Left) Flank—MARCH. At the command MARCH, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) in marching and step off in the new direction.

*Oblique March.*—Being in march the commands are Right (Left) Oblique—MARCH. At the command MARCH, given as the right (left) foot strikes the ground, advance and plant the left (right) foot, then face to the right (left) oblique in marching and step off in the new direction.

To resume the original direction, the commands are—Forward, MARCH. At the command MARCH each individual faces half left (right) in marching then moves straight to the front.

*Change Step.*—The commands are Change Step, MARCH. Being in march at quick time, at the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, plant the toe of the right foot near the heel of the left and step off with the left foot. (Execute the change on the right foot similarly, the command MARCH being given as the left foot strikes the ground.)

*To the Rear.*—To face to the rear in marching, being in march, the commands are: To The Rear, MARCH. At the command MARCH, given as the right foot strikes the ground, advance and plant the left foot, turn to the right about on the balls of both feet and immediately step off with the left foot.

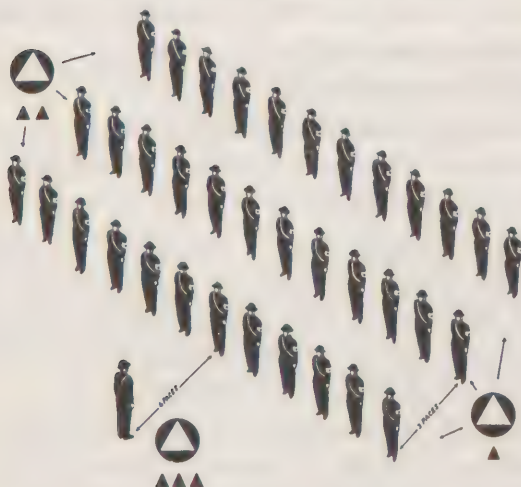
*Other Marchings.*—March other than at Attention. The commands are: Route Step, MARCH or At Ease, MARCH. Route Step MARCH, at the command MARCH Volunteers are not required to march at attention or to maintain silence. At Ease, MARCH is the same as Route Step, MARCH, except that Volunteers will maintain silence.

*Dismissing the Squad.*—The unit being at a halt the leader calls the unit to attention, if they are not at attention, from a point six paces in front of the center of the unit. He then will give the command—DISMISSED. Volunteers are then free to go and do as they please until the next regularly scheduled drill period.

## ***Forming the Platoon.***

To form the platoon, which consists of 3 squads—the command, **FALL IN** will be given by the senior leader facing the area on which he wishes the platoon to form. At this command the unit will form facing the leader with its center 6 paces to his front in 3 parallel lines (each of these lines constitutes a squad). (Should there be insufficient men to form 3 complete squads, skeleton squads of as near equal number as possible will be formed in 3 ranks, squad leaders placing themselves directly behind one another.)

**Fig. V.—A Platoon in Column of Squads**



*From this formation the unit can march; forward, to the right, or to the left.*

## ***Platoon Movements.***

At the command: Forward MARCH, each man steps off with his left foot directly to his own front preserving his relative position and so regulates his step that the ranks remain parallel to his original front.

At the command: Right (Left) FACE Forward MARCH, the unit executes a right face on the heel of the right foot and ball of the left foot at the word FACE and at the word MARCH they step off with their left foot as in moving to the front. (Left face is performed by turning on the heel of the left foot and the ball of the right foot.) In the movements to the right or left the commander of the unit takes a position three paces in front of the left file of his command, at double time if necessary.

Being in a column to change direction the commands are—Column Right (Left) MARCH. At the command MARCH, given as the right (left) foot strikes the ground the first man of the leading element on the right (left) advances one step and then steps off in the new direction using half steps until the men to his left (right) are abreast of him. Full step is then resumed.

*Close Interval—Normal Interval.*—Being in column of threes at normal interval between squads to March or form at Close Interval, the commands are: Close, MARCH. At the command MARCH, the squads close to the center by



obliquing until the interval between men is 4 inches. The center squad take up the half step until the dress has been regained.

If this movement is executed from the halt, the squads close toward the center by executing Right or Left Step until 4-inch intervals are reached.

Being in column of threes at close interval between squads to March or form at Normal Interval, the commands are: **Extend, MARCH.** At the command **MARCH**, the squads open to the right and left from the center by obliquing until the normal interval is regained.

If this movement is executed from the halt, the squads Right or Left Step until normal interval is regained.

*Change Direction.*—Being in column of threes to change direction, the commands are: **Column Right (Left) MARCH.** The right flank man of the leading rank is the pivot. At the command **MARCH**, given as the right foot strikes the ground, the right flank man of the leading rank faces to the right in marching and takes up the half step until the other men of his rank are abreast of him, then he resumes the full step. The other men of the leading rank oblique to the right in marching without changing interval, place themselves abreast of the pivot man, and conform to his step. The ranks in rear of the leading rank execute the movement on the same ground and in the same manner as the leading rank.



## Fig. VI

### ***Forming the Citizens' Defense Corps for Parade***

(Services will form and move as platoons)

●	Mayor, Defense Coordinator and Dignitaries.
□	Commander, C. D. C.
▬	Staff.
▬	Messengers.
▬	Drivers.
□	Fire Department Chief.
▬	Auxiliary Firemen.
▬	Rescue Squads.
□	Police Department Chief.
▬	Auxiliary Police.
▬	Bomb Squads.
□	Colors.
□	Warden Service Chief.
▬	Air Raid Wardens.
▬	Fire Watchers.
▬	Emergency Food Housing Units.
□	Medical Service Chief.
▬	Medical Field Units.
▬	Nurses' Aides Corps.
□	Public Works Service Chief.
▬	Demolition and Clearance Crews.
▬	Road Repair Squads.
▬	Decontamination Corps.



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